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LIBRARY OF CONGRESS,
OCT 21 1912
SMITHSONIAN DEPOSIT.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

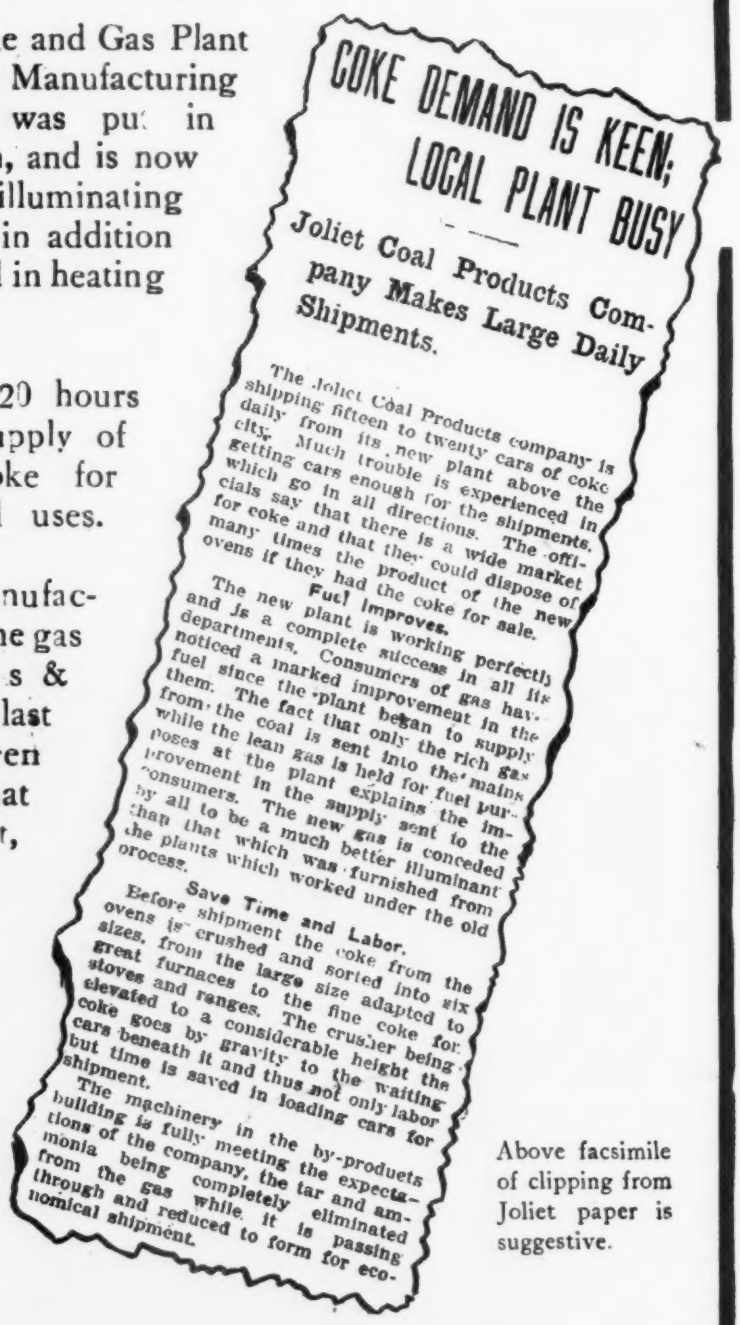
New Koppers Plant in Operation

THE Combination Coke and Gas Plant for the Coal Products Manufacturing Company of Joliet was put in operation on September 12th, and is now making. 3¼ millions of illuminating gas daily for distribution; in addition to the supply of lean gas used in heating the ovens.

The plant is coking in 20 hours and producing a steady supply of high grade Koppers Koke for domestic and metallurgical uses.

The Coal Products Manufacturing Company are selling the gas to the Western United G s & Electric Co npany, and in he last few days the supply has been so constant and satisfactory that the old plants at Auror a, Joliet, and La Grange have been closed down.

Let us write you for a contract before we get so busy that we cannot make early installation.



COKE DEMAND IS KEEN; LOCAL PLANT BUSY

Joliet Coal Products Company Makes Large Daily Shipments.

The Joliet Coal Products company is shipping fifteen to twenty cars of coke daily from its new plant above the city. Much trouble is experienced in getting cars enough for the shipments, which go in all directions. The officials say that there is a wide market for coke and that they could dispose of many times the product of the new ovens if they had the coke for sale.

Fuel Improves.

The new plant is working perfectly and is a complete success in all its departments. Consumers of gas have noticed a marked improvement in the fuel since the plant began to supply them. The fact that only the rich gas from the coal is sent into the mains while the lean gas is held for fuel purposes at the plant explains the improvement in the supply sent to the consumers. The new gas is conceded by all to be a much better illuminant than that which was furnished from the plants which worked under the old process.

Save Time and Labor.

Before shipment the coke from the ovens is crushed and sorted into six sizes, from the large size adapted to urnaces to the fine coke for stoves and ranges. The crusher being elevated to a considerable height the coke goes by gravity to the waiting cars beneath it and thus not only labor but time is saved in loading cars for shipment.

The machinery in the by-produets building is fully meeting the expectations of the company, the tar and ammonia being completely eliminated from the gas while it is passing through and reduced to form for economical shipment.

Above facsimile of clipping from Joliet paper is suggestive.

H. KOPPERS COMPANY

Constructors of Horizontal, Cross-Regenerative By-Product Coke and Gas Ovens

5 S. Wabash Ave., Chicago, Illinois

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Photographing a Diaphragm.

[Prepared for the JOURNAL, by MR. CARLETON ELLIS.]

Among the adaptations of surface, or flameless, combustion developed by Prof. Wm. A. Bone, Mr. C. D. McCourt and associates, there is none more interesting than the diaphragm.

In his address before the American Gas Institute (1911), Prof. Bone stated that in the operation of the diaphragm a "Homogeneous mixture of gas and air is allowed to flow under slight pressure through a porous diaphragm of refractory material from a suitable feeding chamber (see Fig. 1) and is caused to burn without flame at the surface of exit which is thereby maintained in a state of red-hot incandescence. The diaphragm is composed of granules of firebrick bound together into a coherent block by suitable means; the porosity of the diaphragm is graded to suit the particular kind of gas for which it is to be used, but for undiluted coal gas, or coal gas containing only a small proportion of water gas, a diaphragm so porous that the gaseous mixture will readily flow through it at a pressure of ¼-inch water gauge is employed. The diaphragm is mounted in a suitable casing, the space inclosed between the back of the casing and diaphragm constituting a convenient feeding chamber for the gaseous mixture which is introduced at the back. Such a mixture may be obtained in either of two ways; namely, (1), by means of suitable connections through a Y-piece, with separate supplies of low pressure gas and air (2 or 3 inches w.g. only is sufficient); or (2), by

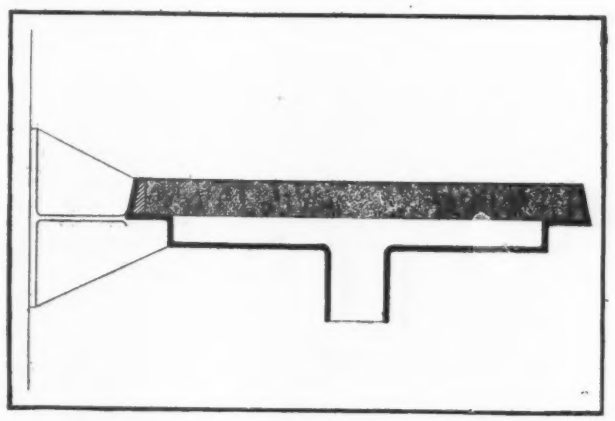


Fig. 1.

means of an "injector" arrangement connected with a supply of gas at 2 pounds per square inch pressure; the gas in this case draws in its own air from the atmosphere in sufficient quantity for complete combustion, the proportions of gas and air being regulated by a simple device.

"To start up a diaphragm, gas is first of all turned on and ignited as it issues at the surface; air is then gradually added until a fully aerated mixture is obtained. The flame soon becomes non-luminous and diminishes in size; a moment later it retreats to the surface of the diaphragm which at once assumes a bluish appearance; soon, however, the granules at the surface attain an incipient red heat, producing a curious mottled effect; finally, the whole of the surface layer of granules becomes red-hot, and an accelerated "surface combustion" comes into play. All signs of flame disappear, and there remains an intensely glowing surface—a veritable wall of fire but without flame—throwing out a genial, radiant heat which can be steadily maintained for as long as required." * * *

"The actual combustion is confined within a very thin layer (⅛ inch to ¼ inch only) immediately below the surface, and no heat is developed in any other part of the apparatus; kindly observe that, whilst the front of the diaphragm is intensely hot, the back of the apparatus is so cold that I can lay my hand on it. In the second place, the combustion of the gas, although confined within such narrow limits, is perfect, for when once the relative proportions of gas and air have been properly adjusted no trace of unburnt gas ever escapes from the surface; (3), the temperature at the surface of the diaphragm can be instantly varied at will by altering the rate of feeding of the gaseous mixture; there is no lag in the temperature response, a circumstance of great importance in operations where a fine regulation of heat is required. The temperature of a diaphragm working on a coal gas and air mixture, at a given rate of feeding, depends on whether or not the intense radiation from its surface is impeded; with a freely radiating surface the temperature of a properly made diaphragm may be maintained at anything up to about 850° C. (say 1,550° F.) according to the rate of supply of the combustible mixture; (4), a plane diaphragm such as this may be used in any position—*i. e.*, at any desired angle between the horizontal and vertical planes; (5), the diaphragm method is amenable to a variety of combustible gases. Coal or coke oven gas (either undiluted or admixed with water gas), natural gas, petrol-air gas, carbureted water gas, are all well suited in cases where unimpeded radiation is required. Also we have constructed, and successfully operated, plane

diaphragms of all sizes, up to 4 square feet in area (2 feet by 2 feet), and are able to vouch from experience that their durability and radiant power are unimpaired even after long continued use."

With the purpose of determining how nearly flameless the camera would indicate combustion of this novel character, as also to roughly determine the acting intensity of the light emanation, photographs of a glowing diaphragm were taken at night in a room entirely dark except for the light coming from diaphragm.

Fig. 2 shows the appearance of a diaphragm 12 inches square photographed by its own light. A diaphragm working at normal intensity seems quite brilliant to the eye. There appears to be an abundance of short wave or light rays. Accordingly it was surmised that a very brief exposure would suffice to yield a suitable photographic impression, and the two first plates were given ¼ and 1 second exposure, respectively. No image appeared on either plate, even after protracted development.

A 10 second exposure was tried and a fair image obtained. Then an exposure of nearly 30 seconds was made, and this proved adequate, the result being that shown in Fig. 2.

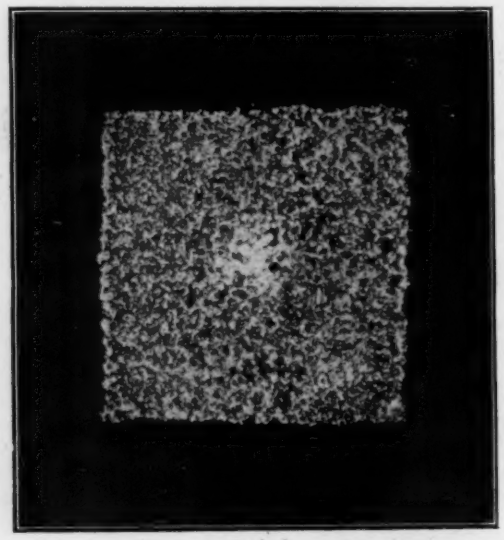


Fig. 2.

Contrary to the suggestion of the eye, it thus appears that the diaphragm does not emanate a large proportion of rays constituting white and actinic light, but rather yields up the potential energy of the gas largely as red or *heat* rays which are non actinic. This, then, is quite in accord with Prof. Bone's statement that by surface combustion a very high heat radiative value is secured.

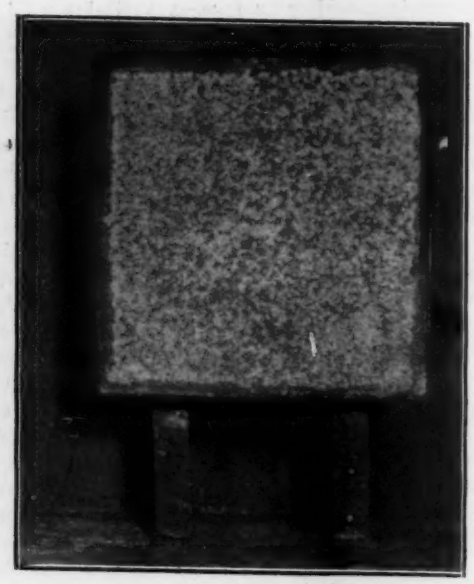


Fig. 3.

Another interesting feature of Fig. 2 is the absence photographically of any halo or corona not detected by the eye, indicating the entire absence of flame development. The clean cut, sharp edges of luminous diaphragm, as revealed by the camera, prove what the eye can not as adequately judge; namely, the non-existence of any flame or corona.

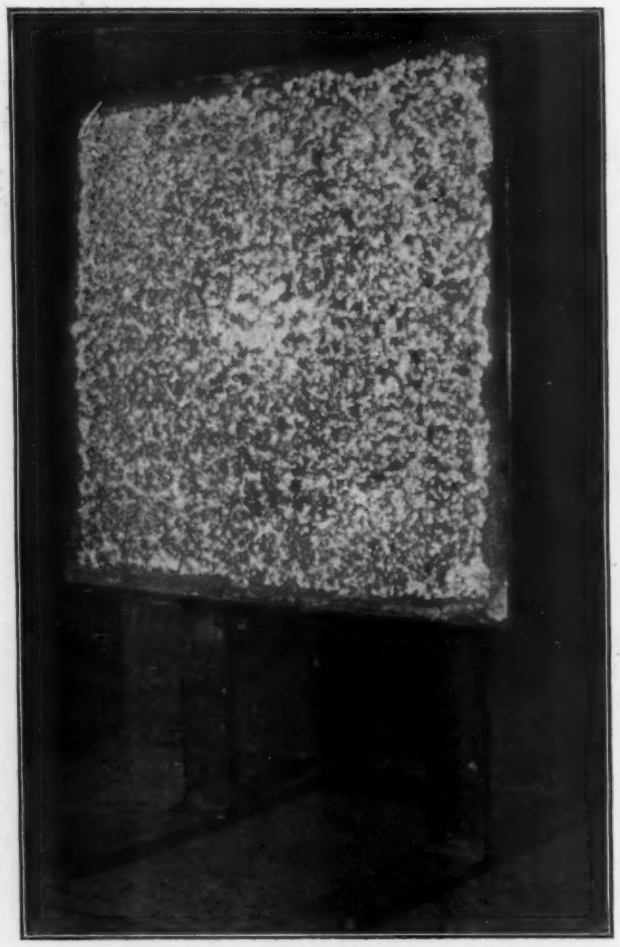


Fig. 4.

Figs. 3 and 4 are doubly lighted views, in each case a 30 second exposure of the glowing diaphragm first being made and this followed by a magnesium flash to enable the supports of the diaphragm to be seen. The glow of the porous surface is apparent in spite of the superposed flashlight exposure.

The diaphragm employed was one of relatively coarse grain, which had previously been used in a large number of experiments, and the distribution of gaseous mixture through it probably was not as uniform as with a diaphragm of finer texture, and especially one which had not received such rough experimental handling.

[Communicated.]

Some Notes on the Remodeling of the Coal Gas Generating Plant, Atlanta, Ga.

On account of the constantly increasing output of gas and the limited space in the works of the Atlanta (Ga.) Gas Light Company, the management there decided late last year to remodel the manufacturing division of the works, in order to increase the gas output and to decrease the operating labor expense. Mr. R. C. Congdon, the General Manager, took the matter in hand and perfected the following plans:

The coal gas plant to that time consisted of 22 full-depth benches of 9's, built back-to-back. They were charged by hand with scoops; the coal was brought in by hand labor from coal house; the coke was quenched in coke chutes and dropped into buggies on clinker floor level, thence taken by hand labor to elevator and dumped into coke bins, or else taken, hot, direct from retorts to water gas generators, by hand labor.

In the remodeled plant, machinery is used wherever possible, thus doing away with a large percentage of hand labor. The contract for benches and charging machine was given to the Parker-Russell Mining and Mfg. Co., of St. Louis, Mo., and the type of bench adopted was designed by them especially for this installation.

Each bench has 9 through retorts, 16 inches by 26 inches by 21½ feet

7 inches long. The cross-section of these retorts is of the Parker-Russell Company's standard type, giving the greatest measure of coal space to a given area, and, with high sides and oval bottom, suitable for both hand and machine work.

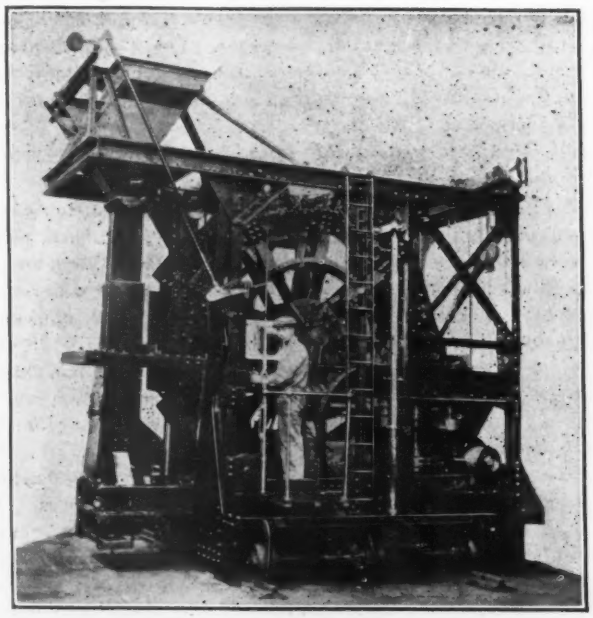
Each through bench is provided with a single producer, placed on the discharging side, which projects 3 feet beyond face of retorts, and fitted with a very large filling door, so that the coke, when discharged from retorts, will fall directly into furnace with a minimum amount of ramming. The producer, of ample internal proportions, has straight sides and large grate surface, the full width of furnace, to eliminate as much as possible any growth of clinkers.

The recuperators are of the Parker-Russell Company's standard, full depth design, giving a maximum of secondary air heating.

The waste gases are taken from all branches into a central tunnel-flue under benches, through a cross-flue to a hollow tile chimney. The chimney, which was designed and built by the Parker-Russell Company, is 75 feet high and 4½ feet internal diameter. It has sufficient draft capacity for over 11 through benches. The present installation includes 6 through benches only, but when the whole stack is rebuilt it will comprise 11 benches.

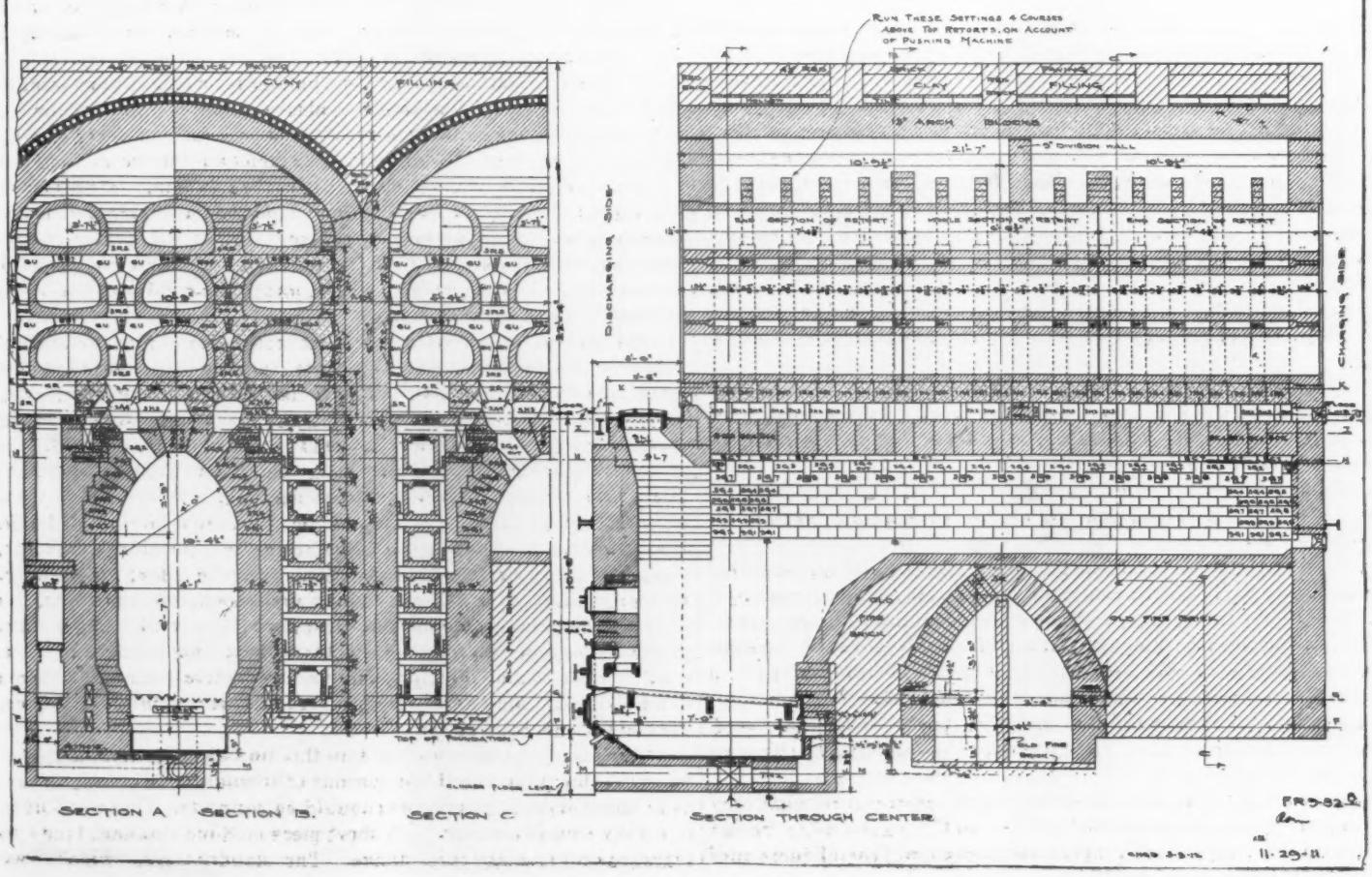
The settings in these benches, both around retorts and including tiles and combustion chamber, are of especially moulded shapes of silica material of the Parker-Russell manufacture. The material in retorts is of that Company's special mix; and the balance of work is of its standard, high-grade material.

Each end retort is provided with one 8-inch diameter standpipe only; four pipes of each bench being on the discharging side with 5 pipes on charging side. There are two lines of hydraulic mains with separate gas, liquor and tar offtakes. The hydraulic mains are those that were used on the old benches. The balance of ironwork is new, and was furnished by the Parker-Russell Company from its designs by the Kerr-Murray Manufacturing Company.



The retorts will be charged and discharged by means of a Fiddes-Aldridge "Simultaneous Discharging Charging Machine," furnished by the Parker-Russell Mining Company sole agents for the Fiddes-Aldridge apparatus in the United States and Canada. This machine is on the one-stroke principle; viz., the new charge of coal is laid at same instant as the charge of hot coke is pushed out. This machine will lay a maximum weight of coal in the retort, suitable for 6 or 8 hour burning, placing the same absolutely level from end-to-end. It

THE PARKER-RUSSELL MINING & MF'G CO.
ST LOUIS, MO
BENCH OF 9 THROUGH RETORTS, 21'-7" LONG
WITH FULL DEPTH RECUPERATION FOR
ATLANTA GAS LIGHT CO.,
ATLANTA, GA
SCALE: 3/4"=1'



is operated by an electric motor; is simple and strong; is capable of doing a very large amount of work in a short time, and is the "Last Thing" in retort house stoking machines. The Atlanta example is the first machine of this type to be installed in the United States and will, no doubt, attract much attention and thought from the gas fraternity throughout the country.

The following apparatuses were installed under the direction of Mr. R. C. Congdon, General Manager of the Gas Company:

The coal handling machinery includes an electric locomotive crane, which travels on the railroad switch tracks in coal shed, and will deliver coal from any part of storage to a crusher at retort house end of shed. The crusher will break coal to 1-inch cubes. A scraper-conveyor takes the crushed coal from crusher pit and delivers same to the continuous coal bins on charging side of benches. These bins are provided with three patent sliding doors to each bench, automatically operated by the F.-A. machine as it travels down the house. These were furnished by the Parker-Russell Company from designs by the Patentees, Messrs. Aldridge & Gibson.

The coke will be discharged into a hot coke conveyor, designed to travel in either direction, with a motor at each end. It will be provided with quenching sprays which will be used when coke is delivered into the new steel and concrete coke bin designed and built by the Atlanta Gas Company.

When it is desired to supply hot coke to the water gas generators, which are situated at the other end of the retort house, the conveyor will be reversed in direction. The conveyor at this end is elevated, the trough being provided with slide valves, also designed that hot coke buggies can be rolled underneath to receive the coke as it falls through the conveyor. These buggies are water jacketed, run on steel rails to each of the water gas generators, and are propelled by a small electric locomotive provided with storage batteries. The conveying machinery was furnished by the Jeffrey Mfg. Company, Columbus, O., and the electric locomotive in coal shed by the Brown Hoisting Machinery Company, Cleveland, O.

The installation is now about completed. The benches have been drying out for several weeks and it is planned by the management to commence making gas about October 21st. The accompanying photographs show the design of bench and machine.

Welding of High Pressure Pipe Lines.

[Prepared by Mr. Leon B. Jones, Engineering Division, Gas Department, Pacific Gas and Electric Co., San Francisco.]

Since the transmission of gas under high pressure has come into common use, many have been the dreams of the members of the gas fraternity of a faultless coupling. Improvements in the manufacture of pipe, and the development of the seamless drawn steel tubing, leave little to be asked in the way of pipe; but, as a chain is no stronger than its weakest link, so is a pipe line no sronger than its weakest joint. Heretofore, the couplings or joints have been the short-lived part of high pressure pipe lines. In practically all the couplings now in use, a compressible elastic gasket is necessary. Rubber has been used in joints of most of the pipe lines in California, but as the short time in which rubber loses its elasticity is greatly decreased by the rotting effect of the compression liquids of the gas, the life of rubber gasket joints is very much less than the life of the pipe.

Pipe lines have been abandoned or removed, because the elasticity of the rubber in the joints was gone, and every coupling was a leak, and still, the pipe, if undisturbed, would have had a considerable life. In some cases the gaskets were removed after several years, and the pipe was still in good condition. Up to the present time, the life of high pressure pipe lines, laid in the average soil, has been the life of the joint.

With the recent developments in oxy-acetylene welding, a new era has been reached in the transmission of gas under high pressure. It is now possible to lay a pipe line without couplings of any sort; a steel-to-steel tube in which the joining of the lengths is of the same material as the pipe. Welding with the oxy-acetylene torch has been successfully done in the large shops for several years, but the recent installation of an 8-inch high pressure line in San Francisco is unique in the adaptation of this process to the welding of high pressure gas mains.

The oxy-acetylene torch develops a flame temparature which may conservatively be estimated at 6,000° F., and it may readily be seen that, with this temperature concentrated in a small pencil flame under perfect control, all metals become amenable to the will of the operator.

The welding of iron, steel, copper or brass is accomplished with greater ease and rapidity than the soldering of tin, for when this powerful little flame impinges on steel, the metal becomes molten in a few seconds.

The recent installation of approximately 5,000 feet of 6-inch steel tubing in San Francisco, in which oxy-acetylene welding was used on every joint, was laid under the most difficult conditions, that afforded an excellent opportunity for practically testing the adaptation of welding to high pressure gas mains. This line was laid in Geary street, at the same time that the Municipal railroad was under construction; and this, necessarily, caused many obstructions and difficulties, but in every case, the oxy-acetylene welding proved itself equal to the occasion, and all difficulties were surmounted.

There are three separate methods in which pipe may be handled when welding with the oxy-acetylene torch. Bell holes may be dug as for any coupling, and the pipe welded in the ditch, or the pipe may be lowered into the ditch and turned while the welds are being made; thus, the welding of many of the joints is done on the top of the pipe, and the necessity for digging large bell holes at every joint is avoided.

The third method, which was found the most practicable, where conditions will allow, is to put short pieces of timber across the top of the ditch at intervals, rolling the pipe into places directly over the ditch. This method insures a good alignment of the joint, and requires the least labor. With it, two men can turn as much as 500 feet of pipe, while the operator is welding the joints, and as a 500-foot length is about as long as can be conveniently handled, it will thus only require a bell hole and a well in the ditch every 500 feet.

While it is possible to make a good weld without turning the pipe, a great deal more time and care are necessary than when the pipe is turned, and the welding is always done on top of the joint. In welding the under side of a joint in the ditch, it is not possible to pile up the metal, as it is when welding is done on top of the joint. A joint being welded in the ditch is also more often allowed to cool before the weld is completed, and this leaves a possibility of pinholes where the weld is commenced again.

To insure against the possibility of the mold not extending through the entire thickness of the pipe, the ends of the lengths to be welded were left about $\frac{1}{8}$ inch apart, and the operator worked with a rod of $\frac{3}{16}$-inch Norway iron in his left hand. This iron is melted into the joint to take care of the gap, and also to build up the metal around the joint. In this way the ends of the pipe are perfectly welded, and the metal at the joint is thicker than in the pipe, thus making the joint the strongest part of the line.

To prove this statement that the weld is as strong, if not stronger, than the rest of the pipe, sample welds were made, and the pipe was afterwards flattened and bent until it was broken. In every case the break occurred back of the weld in the pipe and not across the joint.

A more practical test, which will appeal to gas men, was also made, as follows: Two 40 foot lengths were supported on timbers laid across the ditch, and the ends welded together. All the supports were then removed from under one of the lengths, and the entire weight of this 40-foot length was suspended on the joint. The weld was in no way affected by this severe treatment.

After several hundred feet of pipe are welded into a section, the supports are removed, one at a time, and the pipe reeled into the ditch like so much cable. Careful handling is no longer necessary as a weld, if properly made, will stand the same treatment as the pipe, and any defect is better detected before the pipe is covered.

It may be readily seen that, when welding the pipe on top of the ditch, into sections several hundred feet long, it is possible to work several welding outfits at the same time, with the minimum of labor. If a little care is exercised in distributing the pipe along the ditch, two men can readily roll it into place, over the ditch, for welding. In many cases, after these sections were reeled into the ditch, the ends of the sections were several feet apart. To avoid using a short piece of pipe and making two welds, a block and tackle was used, and, with an automobile for motive power, these sections, in some cases 500 feet long, were dragged several feet in the ditch to meet the end of the next section.

As the tubing which was used on this line was approximately $\frac{3}{16}$ of an inch thick, and would not permit of threading, the question arose as to how valves or governors should be connected. This was solved in a very simple manner. A short piece of 8-inch standard pipe was threaded on to a standard flange. The standard pipe, which was 8

inches inside diameter, was then slipped over the tubing, which was 8 inches outside diameter. After the valve or governor was installed and the flanges bolted up, the end of the standard pipe was welded to the tubing. This installation, which represented about 180 joints, was welded throughout its entire length. At the end of each day's work, the line was tested to 150 pounds pressure and allowed to stand over night. As an extra precaution the joints were also gone over with soapsuds. After completion the entire line was tested to 150 pounds pressure and the line stood at this pressure for 3 days without loss.

The success of oxy-acetylene welding in the field of high pressure gas distribution depends largely upon the cost of operation and its ability to meet the general conditions existing in high pressure work. Such an apparatus to meet the requirements of the present day gas man must be economical, reliable and safe.

Cheap electricity has made possible the use of the electric furnace for commercial products; and calcium carbide of excellent quality is now obtainable at a very reasonable price. There are two general methods in which calcium carbide and water may be brought together for the purpose of generating acetylene gas. "Water to carbide," or "Carbide to water." Generators may, therefore, be classed as water feed or carbide-feed. In the early stages of the development of acetylene, most of the generators were of the water to carbide, or water-feed type. This was due to the fact that it was far easier to regulate the flow of liquids than of solids. However, practice has proven the carbide feed type to be the safest and to produce the purest acetylene. In this type the carbide is fed into an excess of water, and, therefore, the temperature of the generators cannot exceed the boiling point of water and the acetylene, in bubbling up through the lime water formed in the generator is freed from most of its impurities.

The heat produced from 1 pound of calcium carbide and the slacking of the calcium oxide formed, is sufficient to raise 4 pounds of water from the freezing point to the boiling point. It is, therefore, essential that the water in an acetylene generator shall always be in excess. If a few general precautions are taken there need be no danger in the production of acetylene; but the compression of acetylene is another story. One of the dreams of the early acetylene industry was that this gas might be safely compressed into a liquid form for convenient transportation and storage. This would appear an ideal condition, as acetylene liquefies at the comparatively low pressure of 700 pounds per square inch, and a cubic foot of liquid acetylene represents 400 cubic feet of gas. This liquid is only 4-tenths as heavy as water. It must be remembered that acetylene gas is an endothermic compound. In its formation heat is absorbed, and that spontaneous decomposition will take place, liberating this heat, if subjected to abnormal temperature or pressure.

Many violent explosions have occurred, due to liquefied acetylene, and now acetylene, compressed in open containers to a pressure exceeding two atmospheres (30 pounds), is considered a very dangerous material. However, calcium carbide represents a more condensed form of acetylene for transportation than the liquefied gas. A cubic foot of carbide represents about 500 cubic feet of available gas, while a cubic foot of liquefied acetylene represents only 400 cubic feet of gas. Recent developments have also provided a substitute for liquid acetylene in what is known as dissolved acetylene.

While acetylene is soluble in its own volume of water, its very great solubility in acetone has broadened the field of the uses of acetylene many fold. Acetone will dissolve 24 times its volume of acetylene at atmospheric pressure, and, for each additional atmosphere to which it is subjected, a similar quantity will be dissolved; in other words, the solubility increases directly with the increase in pressure. Dissolved acetylene makes possible hundreds of uses of acetylene, and the oxy-acetylene blowpipe, which would have been impossible before its discovery.

With the use of dissolved acetylene and oxygen under pressure, a complete oxy-acetylene welding outfit is very readily portable, and ready for instant use, and can be used in many places where a generator would be impracticable or impossible. When acetylene is dissolved in acetone it seems devoid of all possibility of an endothermic explosion under pressure; but the bulk of acetone is greatly expanded by this great absorption of acetylene, so it will readily be seen that any container used for acetone for the dissolving of acetylene must be in capacity equal to the acetone expanded.

As the acetylene was used from such a container and the acetone contracted to its normal bulk, open spaces would be left above the liquid in which free (or undissolved) acetylene would exist, and thus create danger from explosion. This is overcome by the use of a porous solid which is inert to the acetone and also to the acetylene. Asbestos is adaptable for this purpose, and as it is from 75 per cent. to 80 per cent. porous, the tanks can be packed to exclude all possibility of open spaces for free or undissolved acetylene, and yet leave the greater part of its capacity for acetone and dissolved acetylene.

Calcium carbide can now be obtained at 5 cents per pound, and as a pound of carbide will produce 5 cubic feet of acetylene, the cost of acetylene will be 1 cent per cubic foot at the generator, with an additional cost for compression if it is desired to use dissolved acetylene from tanks under pressure.

Until the introduction of the autogenous or oxy-acetylene welding practically all of the oxygen used in the United States was used for medical purposes, consequently exorbitant prices were obtainable; but since the entrance of oxygen into the commercial field many fertile minds have been busy with the problem of its economical production. Probably the most widely known method is from the reaction of certain chemicals. Oxygen is easily obtained by heating chlorate of potash or chlorate of soda, but as the reactions take place violently, with the resultant release of all the oxygen at once, the reaction is impeded by the addition of ¼ part black dioxide of manganese. With the addition of the manganese dioxide, the oxygen is given off continuously until the reaction is complete. Another method is the use of chloride of lime and copper sulphate, with the addition of iron sulphate as a catalyzer; but as the use of the chemicals for the production of oxygen is not feasible on a large scale, and the economy limited by the price of the chemicals, other methods must be resorted to.

Oxygen may be very cheaply produced by the liquefaction and distillation of air. The air is liquefied by high pressure and low temperature, the oxygen and nitrogen being separated by distillation, due to their difference in boiling points. This is probably the most economical method of producing oxygen, as there is an unlimited market for the residual nitrogen as a fertilizer. This method requires an extensive and expensive outlay for equipment, and the market for oxygen as yet has not warranted the installation of such a plant in the United States, although oxygen has been produced in large quantities in this way in Europe for several years.

Another method, which is probably the most promising of cheap oxygen in the near future, is the electrolysis of water or the dissociation of water by the use of electricity. The cost of production of electrolytic oxygen is directly dependent upon the cost of electric energy. The cost of equipment for this method of production is not prohibitive and, with the prevailing low price of electricity, oxygen should be obtainable in the near future at a cost not to exceed 2½ cents per cubic foot.

Acetylene gas, of all the hydrocarbon gases, most nearly approaches pure carbon. It is over 92 per cent. carbon and has a heating value of 1,635 B. T. U's per cubic feet, which partly explains the remarkable temperatures attained with the oxy-acetylene blowpipe.

Acetylene requires for complete combustion 12½ times its volume of air or 2½ times its volume of pure oxygen. If complete combustion were attained by burning acetylene with 2½ times its volume of oxygen the products of combustion would be carbonic acid and water.

However, it has been practically proven that the best welding results are obtained by the use of slightly over 1½ volumes of oxygen to 1 volume of acetylene, and with this incomplete combustion the products of combustion change and instead of carbonic acid and water being formed carbon monoxide and hydrogen are formed. To this formation of hydrogen, which surrounds and envelops the point of welding, is attributed the credit for the fact that the oxy-acetylene, unlike many other of the methods of welding, has no injurious effect on the metal.

From the foregoing it will be seen that the cost of the oxygen for the oxy-acetylene torch is materially less than would be calculated. The torch used for oxy-acetylene welding is constructed upon the injector principle, in which the oxygen and acetylene are conveyed through separate tubes to within an inch of the point of combustion. The acetylene is usually conveyed direct from the generator, through hose connections to the torch, at a pressure between 3 and 5 pounds per square inch. The oxygen, stored in tanks, is used through a reducing valve and hose connections to the torch at between 15 and 20 pounds per square inch. On the handles of the torches are controlling valves whereby a nicer regulation is attained. For lighting the torch the acetylene is first turned on full and ignited. Oxygen is then added until the flame becomes a single cone. An excess of acetylene produces two cones and a white color, while an excess of oxygen produces a violet tint.

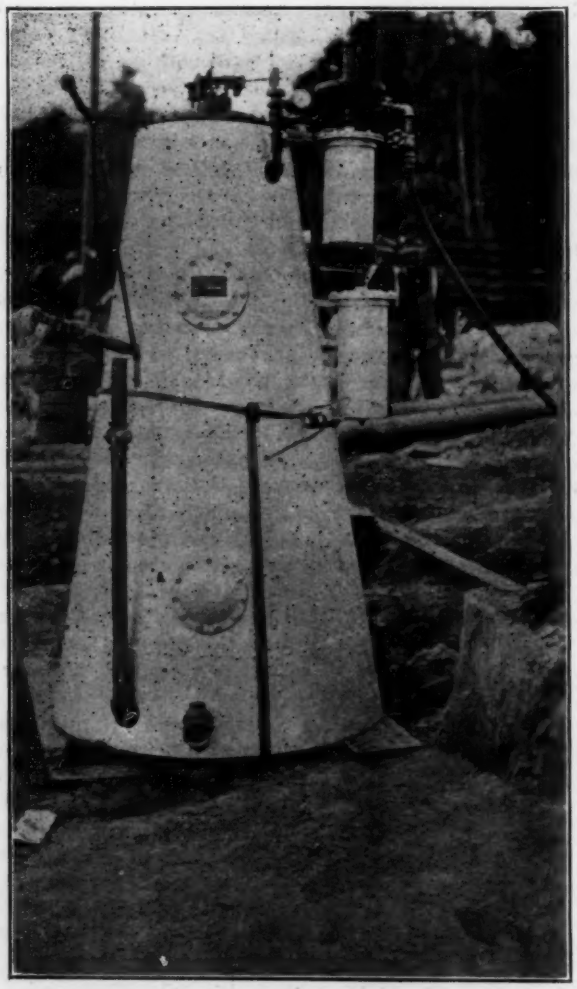


Fig. 1.—Acetylene Generator.

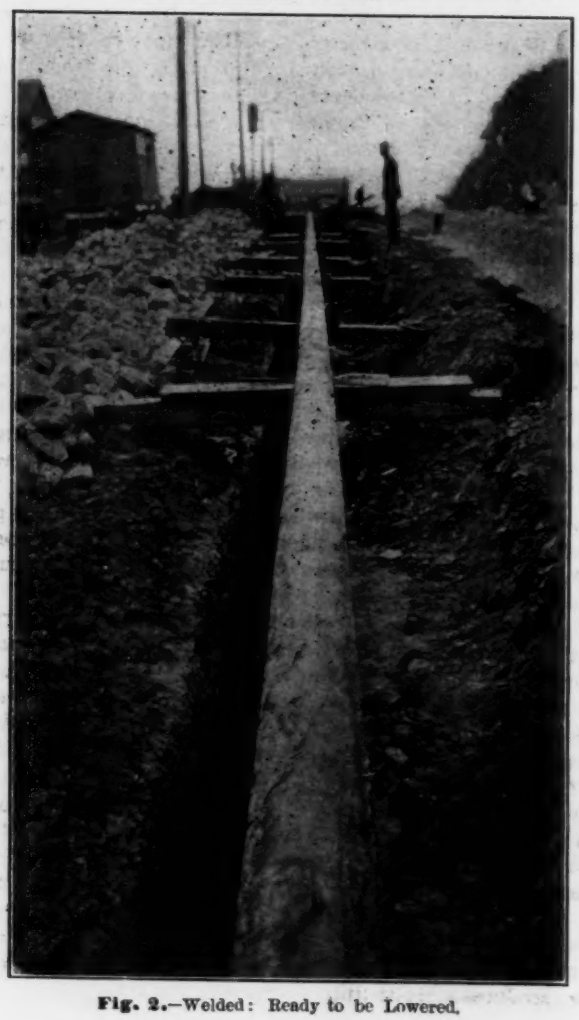


Fig. 2.—Welded: Ready to be Lowered.

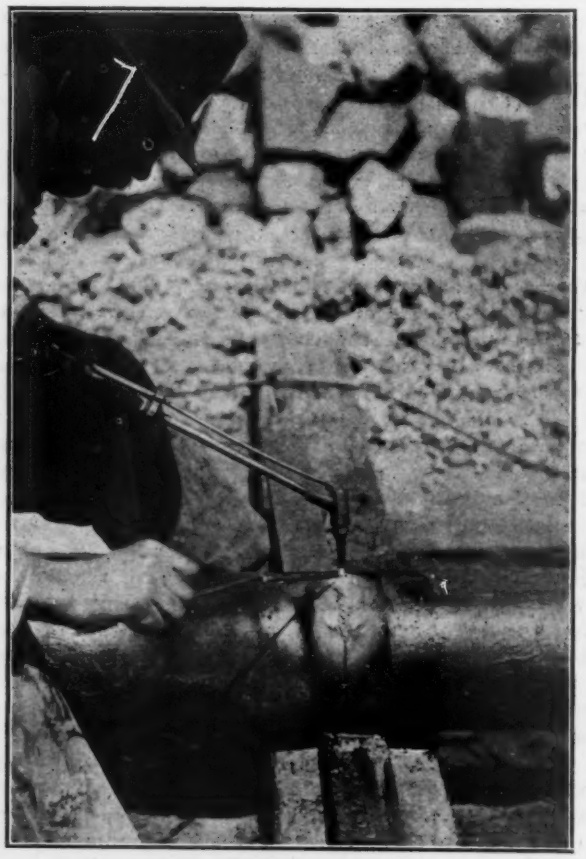


Fig. 3.—Welding on Top.

Fig. 4.—Welding Underneath.

The hourly consumption of the torch used for 8-inch steel tubing was 24 cubic feet of acetylene and 30 cubic feet of oxygen. Using acetylene direct from the generator, at a cost of 1 cent per cubic foot, and oxygen from tanks at 6 cents per cubic foot, at which price it is now available in San Francisco, the cost of operating the torch would be $2.04 per hour and, allowing 40 cents per hour for the labor of an operator, the total cost of operation would be $2.44 per hour. As the average time necessary to weld a joint on top of the ditch, where the welding is done on top of the pipe, is 10 minutes, the cost of such welds would be slightly over 40 cents per joint. The time necessrry

Fig. 5.—Welding on T. p. Pipe Turned in Ditch

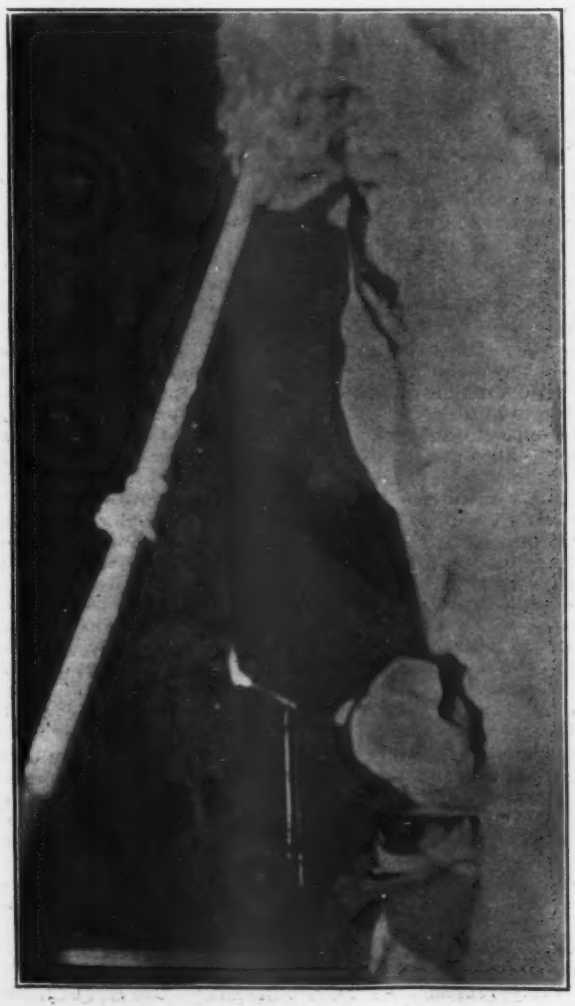


Fig. 6.—Welding in a Bell-Hole.

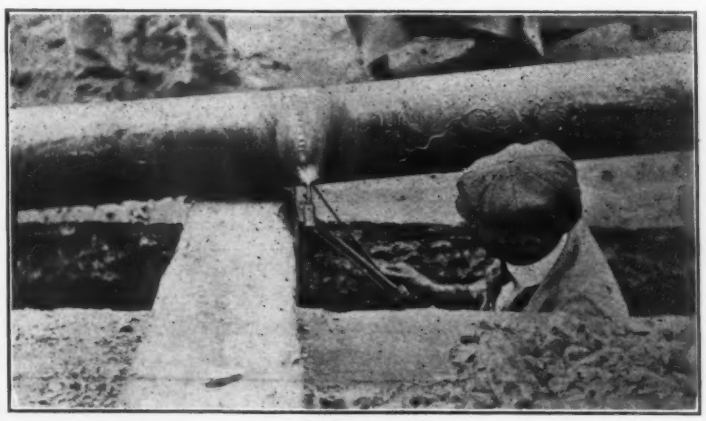


Fig. 7.—Pipe Being Fed into Ditch as Each Length is Welded.

to weld a joint in the ditch, where the operator was forced to weld underneath the pipe, was 28 minutes per joint, making the cost of these joints $1.13 each; but if the pipe is welded into long sections on the ground it is only necessary to have a weld in the ditch to every 10 joints welded on the ground. This would make an average cost of 49 cents per joint, which would be approximately 2 cents per inch of circumference on steel tubing $\frac{3}{16}$ inch thick, and from this can be estimated the cost of welding various sizes and thicknesses of pipe, as the time per weld, and consumption of oxygen aud acetylene, would increase in proportion to the size and weight of the pipe.

Commercial Gas Illumination.

[Prepared by Mr. W. T. Pease, Manager Gas Arc Division, Pacific Gas and Electric Company, for the Twentieth Convention, Pacific Coast Gas Association.]

The subject of illumination is an interesting and an almost inexhaustible one, for the various ways of accomplishing commercial illumination furnish subjects for the thought and study of every gas man who desires to keep in touch with the trend of his business. The subject of illuminating with gas is every day calling forth new ideas and new methods, and we are daily receiving new object lessons, in the use of gas for illuminating purposes, which are opening our eyes to its utility and value. No man can truthfully say that all the advantages of gas as an illuminant have been fully considered or its possibilities thoroughly sounded. So let us enumerate them, if we may, from the gas company's standpoint, and show also what the consumers gain from the proper use of gas in this field.

Stores, factories, warehouses, parks and streets, all enter into the commercial field. In any of these places the most desirable light is that which approaches nearest to daylight, and produces an effect which is healthful and beneficial to those who use the light. Many of our places of business are so situated and crowded away from daylight as to need a lot of auxiliary lighting during the daytime, and many are in a large measure very poorly lighted, thus offering a field to the aggressive gas man for an active campaign to secure profitable business. Very many of the troubles of the gas company are traceable to the improper use of its products, and a system of lighting with improved devices, installed and properly kept up, under the supervision of the gas company, will undoubtedly result in the increased sale of gas and increase the popularity of the company and its product. We cannot help but think well of those who serve us well; and the fact that a gas company shows an increasing and continued interest in the consumer's welfare, should produce as a result his continued good will.

Public service corporations who aim at good service from the gas house to the lamp are public benefactors. They will be sure to gain such a position, if it is known that attentive service is available and intelligent attention given to lighting requirements. In all classes of commercial establishments and factories the value of a good lighting system means added profit to the merchant and manufacturer.

The problem of commercial illumination—for commercial illumination has ceased to be a haphazard proposition and has become a problem—is one of the most interesting and absorbing sciences developed in recent years. In approaching the problem of illumination

(*Continued on page* 266.)

THE AMERICAN GAS LIGHT JOURNAL

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NEW YORK, MONDAY, OCTOBER 21, 1912.

BRIEFLY TOLD.

DEATH OF COL. FRANK S. RICHARDSON.—Too late for other than the briefest mention in this issue, comes the sad news that Col. Frank S. Richardson, formerly President of the North Adams (Mass.) Gas Light Company, and an ex-President of the New England Association of Gas Engineers, died in the House of Mercy, North Adams, the morning of the 15th inst., in which shelter he had undergone an operation for appendicitis. On the 18th inst. he would have celebrated the recurrence of his 56th birthday. We are indebted to the courtesy of Messrs. Chas. F. Prichard and Andrew K. Quinn for this mention.

DEATH OF MR. SYLVESTER WATTS.—And to the kindness of Mr. Frederic Egner we have knowledge of the passing away of Mr. Sylvester Watts, President of the Watts Engineering Company, and owner of the Columbia (Mo.) gas works. His death occurred the morning of the 14th inst. He was in his 76th year.

LAST week we said that Mr. H. Pearson Macintosh had been appointed Superintendent of the Plymouth (Mass.) Gas Light Company; we should have said assistant to Superintendent H. H. Kelly.

[Special Editorial Correspondence.]

SEVENTH ANNUAL MEETING, AMERICAN GAS INSTITUTE.

MARLBOROUGH-BLENHEIM HOTEL,
ATLANTIC CITY, N. J., Oct. 17, 1912.

The Seventh Annual Meeting of the American Gas Institute, was virtually begun in this famous abiding place in perhaps what might be properly called the greatest pleasuring seaside resort in the world, at say 7 o'clock the evening of the 15th inst. The "Addicks' Special" had safely carried from New York about 150 of the New York contingent, together with two score or more of the Eastern members, many of whom arrived in New York early the morning of the 15th, via the Sound Steamer route, which way was generally selected when it was known that the "Special" by rail from New England was found not practicable. Many of the Western and Southern members were also in evidence at this early time, and the capacious, well set up lobbies of the Marlborough-Blenheim looked even then as though the convention session's were going on. However, the groupings here and there, did one care to pass from one to the other, with the idea of finding out that which was going on, were not discussing matters altogether of a business nature. New England, the Middle and Western States delegates were considering matters far from "shoppy" in their moment. Quite noticeable in the groups were the colorings of the garments that betokened the presence of many of the sex whose wishes sway the world of the gas man, as they in reality sway the worlds of other industries. Indeed the ladies who responded to the 1912 call of the Institute likely outnumbered those who gave similar response in other years. Greetings were offered, congratulations were proferred, gossip was merrily exchanged; but when the gayety was at its highest and best the signs of fraternity and merriment were hushed in the receipt of the appalling news that a man who had been honored to the highest by the Nation had been stricken by the act of a miserable, would-be assassin. The change in the demeanor of the assemblage, when the announcement was made that ex-President Roosevelt had been perhaps mortally wounded by some skulking wretch, was really awesome. Speedly the parlors and other meeting places were changed from gladsomeness to gloom, although happily it was not long before the wires brought the information that the work of the assassin was far from being accomplished as the miscreant would have had it. The ill-tidings, however, were sufficient to put at an end the informal reception.

The morning of Wednesday opened gloriously. Never did the fair city-by-the-sea look better than then. Old ocean seemed to drowsily roll in monotone, yielding to the caresses of as magnificent an October sun as ever shone; the first frosty rhyme of autumn painting the famous boardwalk in a sparkle of coloring that was positively gorgeous. And in reassuring force came the splendid messages out of the West that every sign marked the surety that Mr. Roosevelt's life would not go out through the efforts of the unfortunate who had sought to end it.

As the trains that kept rolling in were delivered of their passengers, he attendance in the Marlborough-Blenheim became speedily augmented, until at breakfast time the house in fair manner took on quite a bit of the appearance which characterizes it when "Atlantic's" season is fairly underway. The continued good reports from the West respecting Mr. Roosevelt's condition allayed acute anxiety on that account. So it was with right goodwill that the delegates assembled shortly after 10 A.M., in the Blenheim West Solarium, there to take up the active work of the sessions. The room was comfortably filled when the President (the Hon. I. C. Copley, Aurora, Ills.) announced the opening. The Congressman never looked better in all his active career. Possibly his lines are not those which marked the lithe and debonair Ira of a decade and a half ago; but the change, mark you, is not at all a displeasing one. To the contrary, and as it should be, the Congressman looks the very part. Dignified, but without severity, decided without being dogmatic, active without obtrusiveness, prompt but not pugnacious, he surely made up well for the Presidential part. Having brought the assemblage to order, President Copley, in as clever speech as one could wish, introduced the Honorable A. J. Riddle, Mayor of the city, who, having several times strayed from the main point, eventually welcomed the Institute to Atlantic City. The response to Mayor Riddle's welcome was splendidly made by Mr. Walton Clark, upon whom time seems unable to make a mark, even to the point of retouching some of those sharp lines which are characteristic of those who forge to the front when the race is on. At this point it might not be out of place to remark that the genius who designed the West Solarium kept strictly in view the point that the apartment was to be used as a solarium rather than as a forum. Hence, the apartment is not well calculated to transmit clearly the voice of a speaker. These preliminaries over, the regular order was at hand. The routine included a letter from the family of the late Mr. William R. Beal, expressive of their desire and wish to continue his practice of presenting a gold medal to be awarded to the writer of the best paper submitted each year, and this beautiful token to the memory of Mr. Beal was accepted formally by means of an appreciative resolution tendered by Mr. Charles H. Nettleton. Next came the Report of Directors, which was remarkable for its brevity, although in that brevity seemingly nothing could be charged to omission of any part of the Board's duties. The special committee on holder strains was recommended for continuance, and the usual appropriation of $350 for the use of the Educational Class was recommended, of course. The annual reports of the Treasurer and Secretary (also the report on membership), having been printed as separate documents for distribution, were taken as read. The Treasurer's accounting was not particularly gratifying, since it showed a deficit for the fiscal year amounting to $3,273.86. However, if the sums of two charges that might be considered extraordinary ones—the cost of the lecture by Prof. Bone and the printing of the Centenary Lectures are omitted—these total $3,314.33—the Institute is still a trifle to credit for the twelvemonth.

Then came an interesting proceeding. Mr. E. C. Jones, Chief of the gas engineering section of the business of the Pacific Gas and Electric Company, San Francisco, acting as the special envoy of the Pacific Coast Gas Association, and of the artificial lighting industry of the Coast in general, delivered the invitation from the Coast Association to the Institute, proposing that both bodies participate in an International Gas Congress, to be held in San Francisco early in the fall of 1915, this to be taken in commemoration of the opening of the Panama Canal. That the cause was championed by an eloquent advocate needs no assertion from our pen. Of course, "Ed." C. Jones is, and has been for years, a Pacific Coast man (and a loyal one he surely is); but nevertheless we have the right to regard him as an Easterner, for his capable, successful, lovable father—Edward C. Jones, he was also—for many years held pride of place in New England gas men's hearts, both from his active connection with the South Boston Gas Company, and as one of the founders of the New England Association of Gas Engineers. So, too, the son, who prior to his leaving for the Golden Gate, was actively connected with the old Boston Gas Company in the days of the Greenough dynasty, father and son. The eloquent Californian moved his audience veritably to enthusiasm in his appeal for favorable action, and his cleverness won the day. There was some opposition, and it may not be denied that Mr. Walton Clark's argument—absolutely colorless and judicial—was a powerful one. However, the vote largely favored the proposition. Accordingly the Institute was instructed to inform the Committee on Place of Meeting for 1915 (it will not be selected until the meeting for 1914) of this year's action, with the further knowledge that the agreeable date will be September 27th, 1915. Of great assistance to Mr. Jones was the concise, word riveting speech made by Mr. W. R. Addicks in moving the acceptance of the invitation. Big bodied, red-hearted Vice-President Dewey here assumed the Chair, and President Copley read his annual address. Its text and leading theme varied widely from those usually selected; for both text and theme had to do with the finances of the Institute. That Mr. Copley is a man of sound business views, and also a man whose vision reaches well beyond any limit of narrowness, is amply proven by his own personal conduct of a gas business in Illinois that grows by leaps and bounds. Accordingly he could speak by the book; and he did so. It will fill no useful purpose to repeat extracts from it here. Its thoughts string closely together, and so we may take leave of it by remarking that it bristles with truth tersely told. The address having been referred to the consideration of a commmittee (Messrs. Walton Clark, S. J. Glass and C. M. Cohn), Mr. W. A. Wood, from the Nominating Committee, submitted the following list of officer bearers for the ensuing year:

For President.—Mr. Walter R. Addicks, New York.
" *First Vice-President.*—Mr. J. M. Morehead, Chicago.
" *Second Vice-President.*—Mr. C. N. Stannard, Denver, Col.

For Secretary and Treasurer.—Mr. Geo. G. Ramsdell, New York.
" *Members of Council.*—Messrs. W. H. Gartley, W. E. McKay, R. M. Searle, Irwin Butterworth and E. C. Jones.

Of course, these nominees were endorsed without cavil. That the selection of Mr. Addicks to the highest place in the gift of the Institute, was agreeable, might well be judged from the rousing cheer which marked the close of the President-elect's most appropriate speech of acceptance. That patient and most methodical of men (Secretary and Treasurer George G. Ramsdell), to whom the gas industry of this country owes a debt that it can scarcely ever repay, in accepting anew the labors (and trying ones they are) that belong to the occupant of the twin desks, managed also to say a thankful word or two on account of Messrs. Morehead and Stannard, who were absent. Messrs. Gartley, McKay and Searle also suitably acknowledged their promotion. In fact, the latter's letter-perfect lines were as bright as he is lively; and that is moving some. The balance of the business session for the morning was taken up by a consideration of the "Wrinkle" and "Bureau of Information Budgets," and the respective findings handed in by the Committee on "Publication" and on "Public Relations."

The afternoon, from 2 P.M., was pleasantly passed in various ways. A desperate baseball contest between teams representing "The East" and "The West" was played right after the conclusion of a golf game, in which more or less tea was put in the caddies. The East put it all over their adversaries. We are at a loss to understand why it is so, but no one seemed willing to say who won the cup in the golf contest, which trophy was presented for competition by Mr. C. H. Geist.

The evening session was called shortly after 8, and not far from 400 were present (the total attendance is well over 500). The first regular businoss was the report of the Committee on Calorimetry, presented by Chairman J. B. Klumpp. The next number was a statement from Chairman W. H. Gartley, of the Committee on Thermal Value and Candle Power. The two communications were awarded a thoroughly sifting debate, at the conclusion of which each body was ordered to continue its investigations. The paper by Dr. E. B. Rosa, on "The Legal Specification for Illuminating Gas," was next taken up. His ideas were not altogether concurred in by many, with the result that a lively dialogue ensued, in which Mr. Henry L. Doherty took frequent and prominent part. Dr. Rosa, in explanation and refutation, certainly made the most of his opportunity; and to say that he fairly held his ground is not wide of the mark. The other numbers (save one) scheduled for the evening were in the nature of committee reports, as follows:

"Circular No. 32; Bureau of Standards," by Chairman, Hon. I. C. Copley; "International Photometric Commission," by Chairman Dr. E. P. Hyde; and an "International Uniform System of Pipe Threads," by Chairman, W. H. Gartley. The last number on the list a paper on "Public Service Commissions," by Mr. A. S. Miller, was put over until the morning of Friday. An adjournment was taken at 11 P.M., and all were pretty well tired out.—C.

ATLANTIC CITY, N. J., Oct. 18, 1912.

So far I have neglected to make any mention of the rather sporadic exhibition of various devices connected with the industry on show here in divers places. The Pennsylvania Globe Gas Light Company has a fine example of its lamps strung along Young's Pier. The New York Lead Wool Company has a working exhibit in a shop on the Boardwalk, the outfit including a well-finished specimen of the Simpson automatic calking machine, together with a line of McCluskey couplings. In the yards of the local Gas Company one can view a portable compressor of the Abenaque type, the lead wool of the United Lead Company being used here in demonstrating joint making by machinery. The Pittsburgh Water Heater was shown to advantage on the floor of the main showroom in the office of the Gas Company, and the agent of the Ruud Mfg. Company was clever enough to show a working example of its water heater, all nicely rigged up in this hyphenated hostelry.

Yesterday the sessions were held concurrently, the meeting places of the respective sessions being conveniently close. Section "A," or that devoted to the consideration of "Manufacture," was convened by President Copley at 10 A.M., with an attendance not far from 300. The papers considered were read in this order, "The Photometry of Incandescent Gas Lamps," well treated by that American master of matters photometrical, Mr. C. O. Bond; "The Effect of Various Diluents on the Candle Power of Oil Gas," by Dr. A. H. Elliott, the man of winning personality, and the most eminent of our present day practitioners in gas chemistry; and a very interesting series of chapters, by Prof. E. C. Thomas, recounting "Some Recent Developments in Gas Measuring." The discussions on these matters, save in respect of the number by Prof. Thomas, were rather brief. This ended the morning session in Section.—W.

The topics under the heading of "Distribution" presented at the morning session of "Section B," were about as remote in matter from those discussed in "Section A," as the rooms in which such debates were held. Vice-President Dewey directed the doings in "Section B," and he directed them well. The first number, which was an excellently compiled description of the "Industrial Gas Appliance Laboratory of the Consolidated Gas Company, of New York," at the thought and hands of the Company's industrial division manager, the urbane, quick witted, self contained Mr. H. B. McLean. The text of the paper was followed by the showing of a number of slides illustrative of the appliances in actual operation. The paper deservedly earned the round of applause given to its author, and it led to a discussion that was instructive and interesting.

Next came the report of the Committee on "Utilization of Gas Appliances," which was presented by Chairman W. J. Serrill. The latter is not anything if not thorough; and that his associates and himself were thorough in this instance would seem shown when we note that the matter handed in covered almost 100 quarto pages. In fact, the luncheon hour was reached prior to the completion of the reading, and the latter went over to the afternoon session.—O.

The afternoon proceedings in Section A were resumed at 2 P.M., the papers being taken in the following order: "State of the Art in Coal Gas Manufacture," a dispassionate, analytic statement by Mr. W. H. Blauvelt, President of the Michigan Gas Association; a well balanced report from the Committee on "Carbonization Tests," also submitted by Mr. Blauvelt; and a clever brochure, by Mr. C. J. Ramsburg, detailing "The Value of a Weight Balance in Coal Gas Manufacture." Deny it who may Mr. Ramsburg is certainly a student. These papers were really of a high order, and well merited the debates they brought out. The Beal medal for 1911 was awarded to Mr. L. E. Worthing for his paper narrating "Some Principles of Condensation with Respect to Water Gas."—W.

The afternoon session this day of Section B was commenced promptly at 2, Mr. Dewey in the Chair. The reading of the Serrill report was completed. Much disappointment was expressed over the meagerness of the discussion on this presentation, for certainly, were the recommendations of Mr. Serrill and his associates carried out to the letter, there can be no doubt that many a wail would be heard from those new business managers prone to over-zealousness in their methods. A short technical number, entitled, "Pure Iron *vs.* Steel in Gasholder Construction" was then read by Mr. G. F. Ahlbrandt. It was well illustrated by means of beautiful colored slides; but that the members were not particularly interested in the subject might be inferred from their lack of desire to discuss it. Mr. Carroll Miller here handed in an excellent report from the committee that had been considering the subject of "Small Gas Engines." The Committee is to be heartily congratulated regarding its findings. The gentleman from Providence is no quibbler; further, he is equipped with a mental balance of such poise that his judgment is not swayed by either the magnitude or seeming lack of magnitude of the thing under consideration. In a word, he is through. Even the great, self-complacent gentlemen who manage the affairs of the Otto Company could profitably take more than one hint from the Committee's determinations.

Mr. C. C. Schiller, from the committee on "Consumers' Meters," reported its conclusions, the mention of frequent gas testing in connection with the life period of the measuring vessels being especially noteworthy.

The last set paper in the Section was by Mr. C. W. Andrews, whose graphic description of "The Effect of Cold Weather on the Gas Industry," brought out a flood of narrative concerning the frosty happenings of last winter, in which uncanny season the distributing forces knew not from day to day whether the nights were ever to have an ending. But as "all's well that ends well," the troubles of mid-winter become the "jokes" of mid-fall. There was an addenda to the Section's afternoon work, in the shape of an excellent story and example of the great work that is being done in the resuscitation field by the device known as "The Pulmotor." The story was well told by Mr. J. F. Connor, of the Claim Department of the U. G. I. Company. Now for the banquet.—O.

ATLANTIC CITY, N. J., Oct. 18.

If there were any lack of enthusiasm at the sessions of the second day (and certainly it would be a carper who declared they were in any sense dull) it surely bubbled like sparkling water during the banquet. The infection started on the entrance of "the 400" into the spacious banquet hall of the Hotel Chelsea, and continued until midnight when the "parting shot" was fired. Mr. J. D. Shattuck (Chairman, Committee of Arrangements) certainly made good his promise of novelty, for when the diners were handed "lady dolls" for companions, and when queer hats and queerer masks had been donned and adjusted, the communings were of a nature that sent care to the beach, to room with the sad sea waves. The cabaret show, which was altogether unexpected, was both lengthy and attractive. An irresistible feature was the "work" of "Bob." Searle; another special attraction was the "announcing" of the only "Guiteau." Toast Master, McDonald had little to do, for the only ones that merited formal intreduction were President elect Addicks, and Messrs. C. H. Geist and A. B. Kelley. The "miniature grand" fireworks and the "gassy" balloons went much further than the speeches. The songbook "Gas Gasps," set to meter, was undoubtedly cleverly gotten up but the diners evidently preferred their own "extemporaneous variety." It was a "young man's dinner," which the "youths" enjoyed to the full. And as an innovation it was eminently successful.—O.

ATLANTIC CITY, N. J., Oct. 18.

As I telegraph the Institute is just going into session. Familiarity with your "press hours" convinces me that the press men will not wait, so the concluding day's work will go over for a week. I may say though that the matter of next place of meeting has been referred to the Directors for determination, the weather continues glorious, that the "Cabaret Banquet" does not seem to have interfered with the prospects of the last business session, for at least 300 are present in the hall as I write.—W.

(*Continued from page 263.*)

it must be viewed from two points: First, we must ascertain the object; and, second, the method, necessary to adopt to accomplish the desired result. Take, for example, any first-class department store. The store requires illumination for several purposes· To advertise and to sell, to attract attention, to display its merchandise to advantage, to permit of close inspection and color matching, to make the lighting comfortable and satisfactory for the customer as well as the clerks and employees, and to use the lighting device for ornamental purposes. The methods of accomplishing these results are numerous and widely diversified. The great agency for the accomplishment of this result is gas, every other illuminating agency, except one, having long ago been passed up, because of its convenience and wide adaptability.

Let us first take up the object of illumination. We said in a former paragraph that the merchant requires illumination with which to advertise and to sell. Advertising precedes selling in modern business, for it is the means by which the merchant secures favorable attention. His wares arouse interest, if properly illuminated, and his sales' people do the rest. Good light as an advertising medium is conceded by all the best and most economical advertising that a merchant can adapt. He must have light. It is one of the fixed charges against every business operation, and when it is well done and so accomplishes the desired result, that slight margin between inefficient and proficient lighting becomes an asset of the business, it draws, it attracts, it makes people comfortable, it satisfies them without any apparent effort, it accomplishes results in the same manner that a courteous and obliging clerk will who knows his goods, and where the indifferent and poor one will fail. Advertising by means of light is divided into two classes: Exterior and interior. For the former we have available brackets and posts for lighting parks, factories, grounds and streets, and 1, 3 and 5-light gas arcs, although a different type of post or fixture is most generally in use for the purpose of street lighting, furnished by those who make street lighting their specialty. But where the lighting is a matter of improvement the units above mentioned are highly satisfactory. Outside lighting with gas in any one of these fields, because of the high intensity and candle power obtainable, has made it a great factor in advertising and lighting up dark or unfrequented streets which at night are not usually travelled by the public. A merchant can pay no nicer compliment to his patrons, his neighbors and the disinterested passers-by, than to light up his store front early in the evening and let his lights burn until morning. The advertising advantage of this application of light is enormous and far-reaching. It applies to the big merchant and to the little merchant, in a fair ratio of the expenditure of money for a proportionate ability of each to pay. The little merchant in his out-of-the-way place can well afford to use one or the other of the many forms of store-front iighting with gas that are available, and keep within his ability to pay without hardship. Profits from night advertising by light are net profits.

Light attracts and darkness repels. The well-lighted thoroughfare is the popular thoroughfare in every town and every city. People move about at night where there is light. Where there is light there is interest in the wares that are displayed, and many a permanent business success has been built upon the interest that is aroused and the favorable comment of the passer-by whether he has ever been a patron or not. Outdoor or store-front lighting needs to be done just right, and it should be in due proportion to the prominence of the place and the line of business. It should be wise and judicious, such as the business-building, lighting expert would recommend, not as the padding, stuffing salesman who seeks a chance to get into the eyes of the boss with a big order.

In advertising by light the same two points should be accomplished that must never be forgotten in business—confidence and satisfaction. Let the merchant be overloaded with light and he feels that he has been imposed upon, the salesman loses his confidence and the company that employs him suffers in unfavorable comment and criticism. Confidence is the basis of trade, and it is none the less true in the lighting business than it is in any other kind of merchandising.

Without a question of doubt the average gas man of to-day greatly underestimates the actual value of exterior illumination, and consequently the public knows little about it. Acquiring a knowledge of the value of exterior illumination opens up a new field for the gas company. Recent experiences have shown that it is highly desirable to push, first, for the exterior illumination by gas of all general merchandise stores and establishments. The merchant quickly realizes that plenty of light on the outside attracts trade, he is not slow to keep the interior illumination on a par with the exterior. This system gets more customers for outside lighting than would a concentration on interior illumination, for the interior illumination of places of business is a logical follow-up of outside or exterior illumination. Exterior lighting is a twelvemonth proposition. It is, as a result, a much more profitable line than some of the appliance lines which gas companies are inclined to push. With exterior illumination the gas man has an appliance with which there can be little successful competition. We have recently completed an installation of outside gas arcs which I believe to be the largest in the United States. Upon our first call on the Manager of the Globe Theater we placed 3 arcs for the lighting of a series of billboards. He was so pleased with the installation, from the standpoints of brilliancy and color value and quality of light produced, that we were given an order to light the entire front of the building. In this installation we used forty-one 5-mantle, magnet-valve gas arcs; the building is 150 feet long, with an arch entrance at the extreme left, as the accompanying illustration indicates. We followed the line of this arch, installing the

arcs in a semi-circular position. From the top of the arch we hung the remaining 18 arcs at equal distances across the entire front of the building. On the roof we placed 19 lamps at an equal distance and following the roof line. Below the lower line of lamps we placed 4 arcs where we formerly had 3, to light additional billboards. We used a 2-inch service and a 60-light meter. From the meter we used a 2 inch riser, and for the running line, to the lower row of arcs, we used 1¼-inch runner. From the top row we used a 2 inch runner. We reduced these lines to 1-inch arms on all lamps, bracing them securely with pipe collars and ¼-inch pipe. For the bracket arms on the roof lines we used 3 steam swing-joints, making a universal joint, thus enabling the inspection and maintenance man to bring the lamps into a safe position where they could be properly cleaned. We furnished a portable tripod made from pipe so that the inspection and maintenance man could rest his lamp on it while he was cleaning it. The top row of lights was extended about 3 feet from the building line, being 2 feet over the cornice. All the others are 2 feet 3 inches from the face of the building. In this installation we ran 350 feet of 2-inch and 250 feet of 1¼-inch pipe, and 3,500 feet of No. 18, waterproof wire for the magnet valves on the lamps. We made a drip at the meter and at various places along the line to take care of condensation.

All the lamps were equipped with magnet valves, using 36 dry cell batteries, connected in 7 series, and operated with push buttons. This installation has been the source of much free advertising and additional business. The customer has realized his dream and the salesman and the company have produced a profitable business. Having delivered approximately 30,000-candle power in a space of 150 feet, at an elevation of 40 feet, one can readily appreciate the splendid effect that has been produced. The thoroughfare, flooded with light, is usually thronged with people who seem to make the front of the theater their meeting place. It is good advertising, accomplished at a very moderate cost.

It is an accepted fact that, when illumination is properly applied and the consumers educated to its value, they are extravagant rather than economical in its use. This would lead one to believe that the

consumers are perfectly willing to use gas unsparingly, if the devices for its use are placed within their means, and are not required to keep them in order or be burdened with any of the details connected with their use. "He prospers most who serves best." Service, from a gas company's standpoint, means a free delivery of gas, adequate means being provided for its use. It is not generally conceded that service is good, particularly when the gas company assumes responsibility for the usability of the gas, at the appliance, if the house piping and meter are not adequate to give the consumer the greatest possible use of the gas for lighting when his heating and cooking appliances are also in use. Thousands of dollars are and have been spent in the past to make gas accessible to the meters of all consumers, and to place the mains at strategic positions to secure the most business. This enormous expense is empty of profit, however, unless the consumer is equipped with good appliances and adequate gas supplied at the proper pressure. To procure the maximum gas consumption is the gas company's problem. It is, therefore, up to the gas company to assume the responsibility for the proper operation of the appliances in the hands of the consumers. Good gas, delivered at adequate pressures, through meters of sufficient capacity, into clean and adequate house piping, for use in good gas appliances maintained by the gas company, with free, willing and courteous service, would undoubtedly result in a tremendous increase in the sale of our product. Therefore, it resolves itself to the one point that, if the gas company desires to maintain the high standard of efficiency of its product, it must be so arranged that it is just as easy for the consumer to use gas as it is to order groceries over the telephone.

So far we have generalized on outdoor advertising by light. Let us now take up indoor advertising by light. Our first attention must be directed to the show window, the silent advertising agency of the good themselves the alluring merchandise that brings the looker on into the store while he is there or coaxes him back in the morning. Window lighting needs to be governed by the ever-present law of advertising. It differs from store-front advertising in that the light itself must not be seen. Being the sunlight of the night it should be so engineered that, as nearly as possible, the like results are obtained by artificial means that the sun gives during the day. The light of the window should never be permitted to obtrude itself on the eyes of the people who approach the window for the purpose of viewing the wares. It should be as the sunlight or skylight, and as nearly the same color value and brilliancy as the daylight. How often do we see show windows in which the light is the most conspicuous thing. How often are we blinded by the same light and forced to exert ourselves to see the thing which the merchant, in his desire to attract, places there, but which he has made difficult or unpleasant to look upon. Merchants spend thousands of dollars on handsome show-windows, extravagant window fixtures, employ high priced trimmers to display delicate and expensive merchandise to attract attention, and while they reap a daylight harvest from their investment, often set up by night a blinding light in the window, which is frequently the equivalent of pulling down their curtains. They have been ill-advised, or, if not advised at all, left the matter to one of the kind of salesmen who don't know. The properly lighted window is like the polite salesman again. He shows to the prospective buyer the advantage the wares the latter wants to see. Being unobtrusive, at no time is the attention of the prospect diverted from the goods. It is the obliging demonstrator, the employee who invites you to come again, whether you have spent money or not, or whether you have been sufficiently interested to have made up your mind to buy. We can successfully light a window, using single or double inverted units, with various types of reflectors, and, by several well-known methods, controlling the ignition by means of magnet cocks, clocks, independent pilots, jump-spark or filament ignition, using 2-light, filament-ignition, reflexoliers in an inclosed deck, or in connection with specially constructed reflectors.

One's first impression of a store interior, if it happens to be his first visit, determines in a large measure the character of the merchandizing concern and the probable ability of that concern to render satisfaction. If it is over-lighted or under-lighted the impression is bad. If spot-lighted, the importance of one kind of merchandise over another is emphasized which frequently rouses doubt in the minds of the prospective customers whether the wares that are not as brilliantly illuminated as others are as good. Spot-lighting being poor lighting quite usually results in unfavorable attention. It should, therefore, be avoided and a good, general diffusions produced so that the merchandise in the entire establishment is equally well displayed.

We next come to the importance of good illumination as a factor in selling. Having (by advertising of whatever character employed) attracted people to the respective place of business and interested them in the various wares, you must close the deal. Their desire for the goods must be fostered and they must be helped to decide. As a rule, on account of the advertising the most important elements of the sale have been accomplished before the customer arrives at the establishment; but if desire is not increased, by the ability of the prospect to see the goods to advantage, the real closing part of the sale is not obtained, and the investment in advertising is lost. It should never be necessary for a customer to carry a piece of merchandise to a better lighted spot in order to see it. Such diverting efforts on the part of a buyer trying to make up his mind often result in no sale, or its disheartening equivalent, a deferred sale.

For interior lighting we have available for use the gas arc, the filament-ignition and pilot reflexoliers, and the single unit light, both upright and inverted. Each in its way has its own application, and the various methods of treatment depend upon the type of business, whether factory, store, office or wareroom, and resolve themselves into a problem for the illuminating engineering skill of the gas company salesman.

In supplying our customers with the type of intelligence necessary to guarantee satisfaction, considerable effort and thought should be employed in perfecting a sales' organization. A great many gas companies feel that their duty has been performed in the way of representation when they establish themselves in handsome quarters, allowing their outside representation to be taken care of by inefficient people. In making this assertion I daresay that only a small percentage of the patrons of a public service corporation ever see the main office. Their business is almost entirely carried on with representatives, and if we are to render this high class service, and afford our customers the privilege of securing intelligent installations, we must have salesmen, not solicitors.

Gas companies throughout the United States are generally adopting the practice of selling service, which is the fundamental principle of all successful business. If we are to sell service, would it not be better to designate our representatives as salesmen, instead of solicitors?

A merchant should make his place of business as comfortable, as convenient and as desirable for night buying as for daylight buying; and we light men hold the key to the situation. We, who deal in the means of illumination, owe it to our patrons to give them the best intelligence for the results they in their line require. Illumination is our business, as well as power and heat, and we should not neglect the small consumer for the larger one.

In conclusion, we have arrived at a period when we can see gas in the field as the greatest factor in all illuminating problems. By means of intelligent, courteous and continued service its position will be maintained. There have never been as many and as efficient gas lighting appliances on the market as there are to-day. There has never been a time when gas companies made better or more marketable gas than to-day. With the gas, the appliance, the intelligent salesman and the service, nothing stands in the way of making gas the illuminating agency of the commercial world.

The A-B-C of Gas Company Advertising.

[Prepared by Mr. Richard C. Fowler, for the 21st Meeting, Michigan Gas Association.]

Any advertising that does not more than pay for itself out of the profits in the new business which it creates is in no sense good advertising.

Advertising of the right sort may be used to acquaint consumers with new gas appliances, or new uses for those they already have. Through it information may be given for the convenience of the public, and it may be used to mould public opinion, boost civic pride, and create goodwill, be insurance against agitation and competition, and assist as nothing else does in the sale of appliances and service. But each advertisement must be of the right sort, written to accomplish a definite purpose, and above all must have the backing of the entire company behind it.

Any advertisement which successfully does any one of these things to a certain extent assists in doing them all, and all of these things are necessary to the promotion of new business. It is reasonable to demand that all advertising shall promote new business; but, just as in the sale, there are the elements of attracting attention, developing interest, creating desire and closing the sale, so an advertisement

may accomplish its whole purpose when it simply reaches the point of attention, interest, or desire, if this is its place in the whole selling plan, or it may need to go farther, and actually complete the sale in the mind of the customer.

It is very common to criticize all advertising which does not complete the sale without knowing anything about what place it was designed to take in the selling campaign, or what kind of co-operation it was supposed to give or to get from the selling organization.

From now on let us class advertising as "Attention," "Interest," "Desire" and "Whole Story" ads. The important thing about such classification is that it fixes the place of such advertising in the general sales' plan. For instance, if you simply desire your ad. to be insurance against possible competition, or to hold up an already established trade or special campaign, use ads. designed primarily simply to attract attention, as this kind of advertising acts rather as a reminder than an educator. Its value lies in the fact that it can be read at a glance, and that, with proper copy, small space may be used to drive home a single thought or two as forcefully as if it occupied a whole page. People will not read your whole story more than once or twice, but they will continue to read the headlines of your ads., and the secret of successful "Attention" copy is to give them merely a headline thought dressed up in attractive form. "Attention" copy alone will not bring in the orders, but is of great value in holding ground gained by a special campaign.

If your aim is to mould public opinion, or simply to give information about new methods of using gas and new appliances, then the ad. should have as much news value as possible, and its main object be to excite interest. Whether your ad should be content to stop after arousing interest is a matter that depends on the appliance advertised, and what kind of a sales' organization you have to follow it up. With arc lights, for instance, we have found it practically impossible to close the sale through advertising, nor is it possible to develop much desire in the mind of the reader. This, then, determines that the main function of the arc ad. is to attract attention and arouse interest. With a high class sales' organization, who thoroughly cover the territory, and to whom it can be left to develop this interest into desires and sales, this style of advertising is very effective.

Closely allied with the advertising that stops at interest is the "Desire" ad. that carries the reader one step farther, but still makes no definite attempt at a sale. The mere fact that this style of ad. contains no mention of price often leaves the way open to many a personal sale where knowledge of the price would have killed the prospect. On high-priced appliances, this is by all odds the best form of ad. to use.

The ad. that tells the whole story is the ideal ad., and in most cases it is the style of ad. that should form the backbone of every appliance sales' campaign. It is not necessarily a big ad., but to be successful, it must contain all of the elements of the sale, viz., attention, interest, desire and close. When this kind of ad. is truly successful, it brings the customer into your office with his mind made up and his cash in his pocket. This kind of advertising develops many easy orders for your solicitors who call at the door, and on the whole builds up greater confidence in your product than an ad. that leaves something to the imagination or to be found out at the office. The only definite rule to be laid down for the ad. that seeks to tell the whole story is that it should develop in the logical order of the sale, and that it should tell the story completely but as briefly as possible. This does not necessarily mean a short ad., for it may take a whole page to tell the story, but it does mean that every sentence should be boiled down to its most concentrated form. The problem then becomes, "How to successfully attract attention, develop interest, create desire, and consummate sales through advertising." Perhaps this can best be discussed by a consideration of the various advertising mediums.

Mediums.—The gas company can profitably use practically all the local mediums of advertising, but some mediums are of far greater value than others. Gas bill "stickers" and window displays undoubtedly yield the largest returns for the small amount of money spent. Newspapers, booklets, circular letters, demonstrators, street cars, signboards, and novelties are of particular value, depending upon the object in view. In Detroit, we spend over one-third of our money for newspaper space, one-quarter for printing, and the remainder for labor, window and miscellaneous expense. We have nothing to do with any form of special editions, programmes, or souvenir stunts, as we find it far better to stay out of them all than to go into the few that are legitimate.

Gas Bill Stickers.—We use a small gas bill sticker, 2½ by 4½ inches, pasted on the face of the bill and consider this some of the most valuable advertising we do. Gas bill stickers should be brief enough to be easily read while paying the bill, and should stand out as distinctly as a postage stamp. Always use color, in either the type or stock of the sticker, and put your most important message here in as few words as possible. "Attention" style of copy is most successful on a small sticker. Don't use your gas bill sticker to advertise a high priced appliance that is of interest to only a small per cent. of your customers. Make it timely and of general interest.

Windows.—Window advertising is well worth considerable time and thought. Whenever possible, make your windows reflect special days and local events. Always try to give your window a central idea, and bring this idea out on the signs. In general, show only one kind of appliance in one window, and, if possible, show it in action or in some way that suggests its use. Cause the window to tell as much of the story as possible. This may be accomplished in a variety of simple ways. For instance, have a cake baking in the gas range, or trim the window with bags of flour and the things used in the baking of bread or pastry. Show the gas flatiron on an ironing board with a clothes rack full of clothes. In Detroit, we had a local laundry do a part of its actual work in our window. Show a "homey" scene for the reflector heater, and a center table and easy chair under your reflex light. The story window does not need elaborate detail; its secret is in putting a few things together in a perfectly natural way. Change your window often; once a week if possible. And keep it bright and clean. The signs are easily the most important thing about gas company window dressing. A good, snappy, attractive show card will give tone and finish to a very simple window. Pictures clipped from magazines and brushed around the edges to look as if they were drawn on the card add greatly to the pulling power of the sign.

Newspapers.—The daily newspaper not only presents to the gas company its greatest opportunity for advertising, but it is also the most difficutt medium to use successfully, and the hardest in which to check results. A few guide posts that we follow in Detroit are:

Remember the value of white space. A white margin is of far more value than a fancy border. Make the size of the ad. conform as nearly as possible to the proportion of 3 to 5; that is one column by 3 inches, two column by 6 inches, three column by 10 inches, etc. Whenever possible tell the story with a picture; and in general, let the picture fill about one quarter of the space. Use only the best line drawings in clear black-and-white. Newspapar half tones are too apt to "mud up" to risk using in an ad. When you are using two or more newspapers, give them different copy, and when running two or more campaigns give each paper a separate campaign for a certain period of time. Each paper will give you better service on an exclusive campaign. You will make a much greater impression on the readers of each paper, and you will be much better able to check and compare results. Except for getting relative check on different papers the use of coupons seldom pays for the space they take up.

Make your headlines as personal as possible. Seldom use more than two kinds of type in one ad. One kind of bold-face for the heads and light-face for the body give all the necessary contrast, and make the ad. easy to read. Make your copy as clear as possible. It is far better to select simple words, that burn into the memory because they fit, than to strive after clever catch phrases or to attempt to be funny. Plain talk that neither exaggerates nor misleads is the kind of copy that develops the confidence which results in sales. Don't describe an appliance in such glowing terms that the reader will be disappointed when he sees it, because it doesn't come up to the mental picture you have created.

In Detroit, we have lately used a great deal of small 4-inch "Attention" copy. The unique thing about these little ads. is they have no display or signature. One stumbles on to them in the paper and gets the thought before he realizes that he is reading advertising. Since there is no other gas company in the city, and since in every case reference is made either to the payments on the gas bills, or to gas appliances sold by us, the benefit is bound to come to us. These little ads. have attracted considerable attention. They were run on Monday, Tuesday, Wednesday and Thursday, with change of copy every day, and different copy for each paper. Of course, copy of this kind is only supplemental to the regular selling campaign.

Booklets.—In Detroit, we publish a monthly folder entitled, "Gas Gossip," which contains all the matter and takes the place of all the miscellaneous booklets which would be necessory to cover the various appliances used in the home. A typical cover has the size usually 4

pages, 3½ by 7 inches. The matter contained is always timely, and made to fit into whatever campaigns are running for that particular month. The distribution is varied from 35,000 given out on our sales' floor, by our solicitors, and mailed with our receipted bills, to a general house-to-house distribution of 90,000 a month. When it has been used as a forerunner for the solicitors and delivered broadcast in their territories about 2 days ahead of their calls, this form of folder has been of remarkably great assistance. In our reflex campaign, this increased the sales an average of a burner per man per day. For special cases, however, as instantaneous water heaters or incinerator prospects, special booklets are better. The main secret of a successful booklet is its distribution. Personal distribution by men other than solicitors as meter readers or bill distributors is the ideal way, unless your list is small enough so that you can afford to use the mail. By putting our booklets in this monthly magazine form, we have been able to get many messages to our consumers in the form of articles and editorials in a very readable and acceptable form. "Gas Gossip" has been an experiment with us, but we believe its returns have more than justified its rather heavy expense. Manufacturers' special booklets and folders are of great value, but they should always be used in connection with some form of follow-up by the local company.

Circular Letters.—Our experience in Detroit with circular letters has not been as extended as we hope to make it. We have, however, learned some things of value. The secret of any circular letter campaign is a live list. It is impossible to know too much about your list of prospects, or to weed it too often to keep it up to date. The more personal and apt you can make your letter fit a particular case the more surely will it have the desired effect. The series of letters here shown [copies of these were in good supply] illustrate this fact very well. These letters were sent out to a very carefully selected list and followed up by salesmen. The second letter was delivered by the salesman on his first call and signed by the prospect. The third letter was sent out about one week after the heater had been installed. The results were as follows:

Report of Automatic Heater Letters.

Letters written and mailed		446
Not interested	89	
Heaters sold	107	
Prospects	47	
Have expensive installations of coal heaters	51	
Going to sell or leave city	16	
Could not locate (out of the city)	37	
Cannot afford	20	
Dead	1	
Total		368
Cards still held by salesmen and no report		78

This would show that 107 sales were made out of a possible 445 with 47 reported prospects and 78 yet to be heard from.

Other Mediums.—Our experience with demonstrators, street cars, signboards, and novelties has been of value, but is not of sufficient extent to enable us to speak with authority on these mediums as applied to the gas business. We believe, however, that all of these mediums may be used to advantage as supplemental to a newspaper, booklet, or circular letter campaign.

Planning the Campaign.—In planning an advertising campaign on any gas appliance, the following questions should first be answered in about the order named:

What will the appliance do?

Who are the prospects?

How many prospects are there?

What is the sales' plan?

How many appliances will this campaign attempt to sell?

What part of the appliance sales profit on each appliance can be used for advertising?

What medium or mediums shall be used?

How long will the campaign last?

When will the heaviest advertising be done?

What kind of copy shall be used, and what shall be the nature of the appeal?

You will then be about ready to actually write the copy.

Of all these the one that most deserves discussion is that which determines what part of the appliance sales profit on each appliance can be used for advertising. This is really the only way to determine how much you can afford to spend. Then a careful estimate of the possible sales gives you the entire money basis of your campaign. By carefully checking your total sales against your advertising, it can be seen at any time whether you are over or under your estimated cost per sale, and be governed accordingly. If under, your whole sales' plan is working successfully; if over, one of three things must be the matter. Either your plan is wrong, or your sales have not caught up to your initial advertising expense, or else your sales' department is not covering the ground sufficiently to gain the full value of the advertising. A little checking and careful analysis will tell you just where you are all the time. In Detroit we keep a monthly record which shows the amount spent on each appliance in newspapers, printed matter, window and labor and miscellaneous for each month, the total number of appliance sales for the month, and the advertising cost per sale. It also gives total yearly sales, advertising cost on each appliance, and yearly adverising cost per sale.

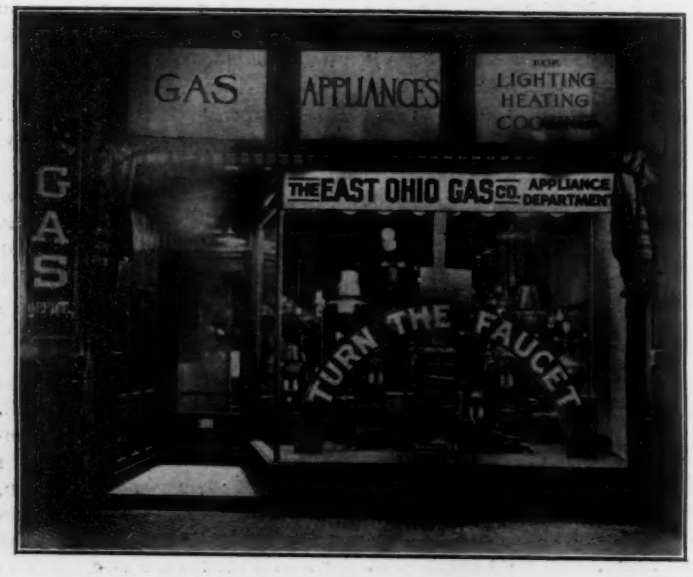
On special, large campaigns we have also kept daily records of the advertising run, the number of men working, the floor sales, the total sales, the sales per man and the weather. With all the conditions in mind, it then becomes to some extent evident how much any particular ad is assisting your sales. By planning each individual campaign separately, making it stand on its own appliance sales profit, by checking and revising all campaigns at least once a month, and by watching the effects and analyzing the causes of each particular ad as far as possible, we are beginning to get our advertising on a business-like basis. Advertising is far from being a science at the present time, but it is coming nearer to it every day; and the problem of making it more tangible is one of the most fascinating problems of business. Gas men are beginning to wake up to the fact that the gas business presents a most fruitful field for advertising research, and an opportunity where scientific advertising can accomplish wonderful results. Sooner or later, gas companies will co-operate in their advertising at great saving and increased effectiveness. Group, State and national co-operative campaigns are bound to come, because they are the logical way for all of us who, trying to do the same thing, do it with the greatest force and the least waste. It is to be hoped that the gas companies of Michigan will take the lead in this matter, and establish an advertising bureau through which all of us can obtain the best advertising brains in the business at a nominal cost to each.

The Gas Meeters Meet in the Meter Works.

The 11th meeting of the Gas Meeters was held the afternoon of Thursday, the 10th inst., at the American Meter Company's shops, 47th st. and 11th ave. At 4 o'clock about 50 members were escorted through the factory, under the guidance of Mr. W. K. Harrington and his aides. This extensive plant having been inspected the members were driven in auto busses to Mock's restaurant, where dinner was served at 6 P.M. Afterwards, during the technical session, Mr. Walter H. Hinman read a very well prepared paper on "Calorimeters and Gas Testing," which was discussed by Messrs. H. H. Greenfield, Secretary, Sprague Meter Company; J. M. Lush, of the New York Improved Meter Company; George H. Caffrey, of the South Norwalk (Conn.) Gas Company; C. R. Hunter, of the Ocala (Fla.) Gas Company; W. F. Hine, Gas Engineer, Public Service Commission, First New York District; J. P. Conroy, of the General Gas Light Company; S. T. Willson, of the Improved Appliance Company; J. M. Brock, of the Eclipse Stove Company. Amongst those present, in addition to the speakers, were Messrs. W. J. Welsh, Vice-President, New York and Richmond Gas Company; W. A. Root, Bronx (N.Y.) Gas and Electric Company; C. F. Leonard, Engineer, Public Service Commission, 2d New York District; Seth H. Ely, Dover (N. J.) Gas Company; Alexander Sinai, Lindsay Light Company; L. R. Dutton, American Gas Company; W. H. Pettes and W. H. Haight, Public Service Gas Company, New Jersey; T. A. Annett, Gas Inspector, Public Service Commission, New Jersey; Ellsworth Francisco, City Gas Inspector, Newark, N. J.; I. W. Peffly, New York city; H. P. Dains, H. C. Aikin, Stanley Grady, H. G. Peck, of Philadelphia; Robert K. Clark and G. B. Child, of Chicago. Before the adjournment, Chairman W. W. Barnes called upon Mr. O. F. Potter, of the Public Service Gas Company, to tell something about the life of Mr. Walter C. Reynolds, whose untimely death was reported in a recent number of the JOURNAL. The next meeting is to be held, Thursday, November 7th, when there will be inspection of the gas fixture factory of Messrs. Shapiro & Aronson. Members are to meet at the New York showrooms of this concern, at 2:30 P.M., when they will be taken to the factory in auto busses. Those desiring to attend are requested to notify the Secretary, H. Thurston Owens, 42 Pine street, New York.

Management & Commercial Methods.

A CLEVER GAS WATER HEATER ADVERTISEMENT.—Mr. Frank R. Hutchinson (better known to his intimates as "Hutch.") is keeping up the good work started by him a year or two ago in the new business department of the East Ohio Gas Company, in Cleveland, O. The use of gas for fuel, for 20 years a household article in the named city, is being extended along the sensible lines put forward by Mr. Hutchinson. The latest advertising novelty traceable to his genius is shown in the accompanying illustration, the main features of which



picture are, of course, reflections of the appliances on hand, but a special feature of the picture is the mechanism shown at the center exteriorly. A spring faucet to the right can be made to drain into a cast iron funnel emptying into a trap to catch the waste water brought about by the action of the experimenter. A trifle back on the window floor is a water heater which is connected up to the device on the window's exterior. The purpose of it all, which really requires no oral explanation, having looked at the cut, is to give any passerby an opportunity to turn on the water faucet and then watch the heater get busy. This simple, practical demonstration has attracted great attention, and in the first two weeks of its operation, 6 large water heaters were sold directly from its inspection from passers-by.

Items of Interest
FROM VARIOUS LOCALITIES.

"G. K.," writing from Brockton (Mass.) under date of the 10th inst., says: "Wednesday evening a business meeting, followed by a social session of the Employees' Association of the Brockton Gas Company, was most successfully carried out. The meeting was held in the Marston Building, and the attendance was excellent. The feature of the business session was a demonstration of speedy and effective means of resuscitating sufferers from or through asphyxiation. Amongst those present were Assistant Fire Chief William F. Daley and several of the rank-and-file of the Department; also, several physicians. The ordinary entertainment (ordinary in that the physicians' show was extraordinary) consisted of a Scotch dialect monologue, by 'Jack' Carroll; a solo by E. Howard Neafsey—'Ed." is his first name; a dance—they said it was a step dance—by 'Billy' Joddin; and a 'song' by Jas. B. Moran. The proceedings were directed by Carroll B. Deady. It was ordered that the meeting time be changed to the second from the first Monday of each month."

MR. A. S. B. LITTLE, General Manager, Consolidated Gas Purification and Chemical Company (Nashville, Tenn.), has forwarded us a sample case for holding permanent record sheet proving the work done by each particular batch of oxide used. He declares it took him many months studying to devise a method which would be successful, and is now satisfied that the enamel iron case determined upon will prove suitable for the purpose in view. He is prepared to send a sample to any gas engineer who has sufficient "gumption" to write for one. It is the intention of the "Little" invention, discovery, or what-you-will, to nail the sheet metal holders on a wooden stave, which is to be driven into the pile of new oxide or into the old pile that is being revivified. During the time the material is in the purifier the stave having the record should be placed on top of purifier, wherefore the record would follow the oxide on its journey through the plant. For the record holder is used a waterproof, linen-paper, printed sheet, on which a permanent record can be made with waterproof ink, showing the sort of oxide used, the quality of same, amount and price; also, the work done during each trip to the purifier. A record may be kept, if desirable, of the type of coal used together with the percentage of sulphur usually in suspension when the gas enters the boxes. This looks good practice, that would be useful in the smallest of plants, in a few of which it seems common practice not to renew the purifying material until some consumer "drops in" to tell the foreman that his burner-pinions are sticking, that his setter dog growls at night when the gas is burning, or that his daughter's collections of potted ferns are commencing to look as if these had been touched by the frost.

IT is positively asserted that a controlling interest in the La Crosse (Wis.) Gas and Electric Company has been sold to capitalists with headquarters in Chicago, and that the purchasers are closely indentified with the Insull syndicate.

"TERRY Turbines Handle Peak Loads," at least so a handsome booklet, just issued by the Terry Steam Turbine Company, asserts. A feature of the typographical get up is a color print tipped on the flyleaf cover, which shows most cleverly the wondrous Japanese mountain, known to them and every photographer as well, as Fujiyama. Of course, the text of the print all goes to show how important the Terry turbine is to the domestic economy of central stations. Those who would like to add this to their collection of pamphlets, "useful and beautiful," may do so by addressing the Company at its general sales' office, 90 West street, New York.

THE MacArthur Concrete Pile and Foundation Company, of New York, has been awarded the contract for placing the foundation under the new 2,000,000 cubic foot gasholder that is to be constructed at Rockaway Park (Long Island, N. Y.), for the Queens Borough Gas and Electric Company. This holder will be built by the Riter-Conley Company, of Pittsburgh, Pa.; and as it includes several features of interest, quite outside the general run of holder construction, we have asked Mr. H. A. Carpenter, the General Manager-Engineer of the Riter-Conley concern to give us in due time a descriptive article concerning it. The foundation will absorb 800 or more of the MacArthur Company's pedestal piles.

MR. H. D. GILLINGHAM has resigned the position of Superintendent of the Southside Division of the new business work of the Nassau and Suffolk Gas Company, Hempstead, Long Island, N. Y. He has accepted the post of assistant to Mr. C. H. French, Sales' Engineer, at Newark, N. J., with the Public Service Gas Company. The change becomes effective to-morrow.

THE Gas Machinery Company, Cleveland, O., has been awarded the contract for the new silica retorts and settings, complete, with its patented inclined-tube recuperators, by the La Salle (Ills.) Gas Company. Mr. George Fisher, now General Superintendent of the La Salle Company, has moved into the new offices, which will afford great comfort to the force. And the named additions to the plant will be sources of positive comfort to Brother Fisher when the "blows" of next winter are keeping things "on their way" over the plains; to say nothing of the pranks of that celebrated buffoon, "Jack Frost."

MESSRS. HENRY L. DOHERTY & CO. inform us that they are offering $10,000,000 in preferred stock in the Utilities Improvement Company, on the offering basis of $1,000 preferred and $400 common for $1,000, cash. The issue is made to sustain at the outset a Company just organized by the Doherty syndicate. It is capitalized in $40,000,000, of which $25,000,000 is preferred (6 per cent.) and $15,000,000 is common; the amount of each issue outstanding to be $10,000,000. The proprietors announce that ½ interest in the present $10,000,000 output has been taken by the same London (England) interests that a short time ago purchased the preferred stock of the Cities Service Company, and stock of the Cities Light, Power and Traction Company. It may be recalled that when the Doherty syndicate offered the shares of the last named companies they were largely over subscribed. The new Company has been formed to take over the following properties:

Toledo (O.) Light and Railways Co.; Danbury and Bethel (Conn.) Gas and Electric Light Co.; Brantford (Ont., Can.) Gas Co., Ltd.; Woodstock (Ont., Can.) Gas Co., Ltd.; Athens (Ga.) Railway and Electric Co.; Coshocton (O.) District Gas and Fuel Co.; Bartlesville (Okla.) Gas, Electric and Railway Co.; Empire Gas and Fuel Co., Kansas, Missouri and Oklahoma; and $2,800,000 six-year, 7 per cent. notes of the Southwestern Reserve Gas Co. According to compilations made with exactitude by the Doherty syndicate, the new Company will, in 1913, earn 6.2 per cent. on its common stock; in 1914, 8.2 per cent.; and 10.7 per cent. in 1915. It is proposed to pay 2 per cent. dividends on the common stock during the first year, which rate will be increased 1 per cent. per annum until 6 per cent. a year is paid.

"ECLIPSE RAYS," states that Mr. John M. Brock, formerly with the W. M. Crane Company, will act as its special representative in New York city.

AMONGST the exhibitors at the electrical show in this city, which was brought to a termination last Saturday, were the Electrical Testing Laboratories, with two displays: One had to do with paper testing, the other with light testing apparatus, including a complete collection of glasswares identified with the lighting industry. The Terry Turbine Company also showed several styles of its turbines, the excellent workmanship exemplified in them being often referred to by the viewers.

THE employees of the New Haven (Conn.) Gas Light Company entitled to share in the profit dividing plan, inaugurated some years ago by the Company, received their dividend the 4th inst. The apportionment involved the dividing and assigning of 98 shares. This makes a total of 1,208 shares divided under the plan which total at the market value ($44 50) per share, represents a sum equal to $53,756. The shares are held by 233 employees.

MANAGER S. T. WHITAKER, of the Ogden (Utah) Light and Railway Company, has been authorized to contract for a storage holder up to retaining 200,000 cubic feet. The holder will be located on a plot on Lincoln avenue, between 20th and 21st streets.

THE plant at Elizabeth City, N. C., is now in satisfactory operation and the applications for services so far exceed the estimates of the proprietors. In fact, the success of the enterprise so far led a local paper to remark: "The citizens are wondering how they managed to get along without gas for so many years."

MR. THOMAS CLARK, since 1906, connected with the Green Bay (Wis.) Gas and Electric Company, resigned from that service to accept a place with the Lake Shore Consolidated Gas Company at the Highland Park (Ills.) station, thereof.

"W. R. W.," writing from Santa Ana, Cal., under date of the 5th inst., says: "The Southern Counties Gas Company has appealed to the Superior Court urging a discontinuance or repeal of the ordinance fixing the gas rate at $1.15 per 1,000 cubic feet. The suit impleads the city of Orange, the Orange Board of Trustees, and the Trustees individually as Board members. The rate ordered is denominated as 'unfair,' and they pray for the substitution of a 'fair' one. It is set forth that Santa Ana, Orange, Anaheim and Fullerton are served from the former named plant, and it is asserted that that plant delivers into the mains of the system each month an average 5,972,100 cubic feet, of which volume Orange takes 720,600. The cost of manufacture and delivery to the mains is asserted to be 65 cents per 1,000, and that it further costs $.403 to distribute it in Orange, which sum added to the first or primary costs brings the total cost of gas to the Santa Ana Company $871 per month. The complaint then recites that at the current date the total money collected for gas per month is $827.69. Further, to this should be added fair allowance for interest and depreciation on the cost of mains and services laid in Orange, which costs total $22,872.

THE proprietors of the Philadelphia and Suburban (Pa.) Gas and Electric Company have announced a reduction of 10 cents per 1,000 cubic feet to all consumers whose monthly bills show a use of 5,000 cubic feet and over. The Company proposes to expend within the next 4 years a sum that will aggregate $1,000,000 in plant betterments in every division. The items include a gasholder up to retaining 3 millions cubic feet; the bulkheading of its property on the Delaware, between Norris street and Central avenue; the building of a coal gas works of modern type; the reconstruction of the water gas plant; the placing of modern means for the unloading and automatic handling of coal and other supplies, etc. The Company is a well-managed one, and its ways are those that indicate a wise conservation of its earning powers.

WE regret to record the death of Mr. Joseph N. Pew, President of the Sun Oil Company, and formerly President of the Peoples Natural Gas Company, of Pittsburgh, Pa. He was in his 64th year, and was a pioneer in the developing and use of natural gas for manufacturing purposes.

THE luncheon of the Twentieth Century Club, of Boston, Mass., served the afternoon of the 11th inst., was notable for a clever description, by Mr. Henry C. French, Assistant Treasurer, the Boston Consolidated Gas Company, of the method pursued by that Company in respect of profit sharing with its employees.

"MISS IOMA SACKER, for some time in the employ of the Joliet (Ills.) Singer Sewing Machine Company, has resigned that service in order to take up the duties of a responsible place in the counting room of the Freeport (Ills.) Gas Company. And, you take it from me; she is all right.—B. V. B."

AT the annual meeting of the stockholders in the Baltimore Consolidated Gas, Electric Light and Power Company, the Directors elected were: J. E. Aldred, Jno. L. Bailey, Van L. Black, N. F. Brady, Geo. Cator, Chas. M. Cohn, Chas. E. F. Clarke, Chas. T. Crane, Chas. H. Dickey, F. H. Hambleton, H. S. Holt, N. James, Thos. J. Shyrock, H. A. Wagner, S. D. Warfield, F. W. Wood and E. R. Wood. The Directors subsequently perfected the following organization: President and Chairman of Board, Mr. J. E. Aldred; Vice-President (in charge electrical division), Herbert A. Wagner; Second Vice-President (in charge of gas division), Chas. N. Cohn; Treasurer, John L Bailey; Secretary, W. Schmidt, Jr.; Assistant Secretary and Treasurer, R. F. Bonsall.

GENERAL PAUL DOTY, Manager of the St. Paul (Minn.) Gas Light Company, has again convinced his associates that it would be in accordance with the heretofore policy of the Company, and in further accordance with the dictate of commonsense, to revise selling schedules, both on gas account and in respect of the electric sendout. The electric current rate has been put at 12.6 cents instead of 15 cents per kilowatt hour; and the gas rate will go to a minimum of 70 cents per 1,000, and a maximum of 90 cents, monthly quantities consumed, of course, to determine the intermediate prices.

IT is virtually settled that the Washington (D. C.) Gas Light Company will purchase the entire capital stock of the Georgetown (D. C.) Gas Company. The taker over has to all intent operated the George town system for some years, or ever since it purchased 3,540 shares of the total 6,000 shares comprising the entire capitalization. It is said that the upset figure offered the minority was $160 per share.

HUNTLEY, ILLS., has granted the application of the Western United Gas and Electric Company to supply gas in that district for a term of 50 years. The agreed-on maximum rate is 95 cents per 1,000.

THE proprietors of the Des Moines (Ia.) Gas Company have appealed to the Supreme Court of the United States for an order declaring the 90-cent gas rate sought to be established there unconstitutional, on the ground that the rate is so unreal, so far as renumeration to the Company is concerned, that if enforced the Company would have to go into liquidation.

L. EVERETT PENNIMAN has applied to the authorities of Provincetown, Mass., for the right to there construct and operate a gas plant for the better convenience of the Provincetowners.

AT the annual meeting of the Massachusetts Gas Companies held some days ago the Trustees elected (to serve 3 years) were: R. Windsor, J. L. Richards (succeeding Albert Strauss), F. E. Snow. Executive Committee: Messrs. Robt. Windsor, C. M. Weld and W. C. Baylies.

ON August 31st the consumers on the books of the Pacific Gas and Electric Company numbered 305,811, an increase of 6,461 since June 30th, and an increase of 18,705 since January 1, 1912.

ONE of the Presidential Electors, Republican ticket, Providence, R. I., is Captain William McGregor, General Manager of the Pawtucket (R. I.) Gas and Electric Company. Now Captain, remember "That the eyes of the country are upon you; and that New England expects every son to perform his duty!" Oh, if everything in life were as easy as it is for our own Captain to perform that trust.

THE first Fall meeting of the New York Section of the Illuminating Engineering Society was held at Keene's Chop House, 70 West 36th street on Thursday evening, October 10th. Two of the convention papers were read and discussed. "Present Practice in Small Store Lighting," by Law and Powell, was read by the Chairman, Mr. G. H. Stickney, and the symposium on "High Pressure Gas Lighting" which was printed in the JOURNAL under the date of the 7th inst., was read by Mr. G. S. Barrows. Prior to the meeting a dinner was served to the members and guests at the same place. The next meeting of the New York Section of this Society will be held on November 18, 1912, at the auditorium of the New York Edison Company on West 27th street, when there will be a demonstration of lighting effects by Mr. Preston S. Millar of the Electrical Testing Laboratories.

The Market for Gas Securities.

The confusion resulting from some of the unreasonable speeches of the schoolmaster candidate for President, and in addition to the act of the miscreant who sought to put away the ex-President, can be charged to a smart drop in quotations for all sorts of shares. Whatever the ex-head of Princeton 'Varsity can do to the gas industry in the way of harm, unless investors fear that he may put up the prices of coal and oil and cut down gas rates, is beyond us. So also, why the ex-President's physical condition should be of financial moment! However, Consolidated is off 2½ points from last week. The opening to-day (Friday) was 145¾ to 146. Brooklyn Union is only off ½ point!

Peoples, of Chicago, made a record early in the week, but the shooting news sent it down to 120 bid. Western investors are very sweet on Peoples, and our remarks anent the cleverness of Mr. Sullivan have been more than sustained.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

OCTOBER 21.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	145¾	146
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	8,000,000	1,000	108	108
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	106	106
Mutual Gas Co.	3,500,000	100	182	187
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	85	50
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98½	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	99½	101
Standard	5,000,000	100	60	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	145	147
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	399,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅝	⅛
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,662,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	881,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	130	133
" Bonds, 5's	10,500,000	—	101	106
Indianapolis	2,000,000	—	38	45
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	91	95
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	98½	99
Laclede Gas Co., St. Louis.	10,000,000	100	106	106¼
Preferred	2,500,006	100	99	102
Bonds	10,000,000	1,000	102¾	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	120	130
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	93½	94
Preferred	25,000,000	100	95¾	96
Montreal Gas Co., Canada	2,000,000	100	236	238
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	5,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	182	190
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	120	121
1st Mortgage	20,100,000	1,000	102	103½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
Pacific Gas and Electric Co.	15,500,000	—	63¾	64½
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	420	425
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

This announcement will appear in this paper once only.

We have underwritten

$10,000,000

Six Per Cent. Cumulative Preferred Stock of

Utilities Improvement Company

and we offer

$1,000 Preferred
$400 Common } **For $1,000 Cash**

Subscriptions are payable 20 per cent. in cash and balance not more than 20 per cent. per month, but deferred paymcnts may be anticipated ***at any time.***

Dividends will be paid from date of issue at the rate of six per cent. on the Preferred stock and two per cent. on the Common stock.

It is expected that the dividend rate on the Common stock will be increased one per cent. each year until six per cent. is reached.

One-half of the above total amount has been sold to our European correspondents for distribution abroad.

Subscriptions will be received until noon, Saturday, October, 26, 1912.

Telegrams of inquiry may be sent at our expense.

Application may be made through your Banker or Broker, or direct to

Henry L. Doherty & Company

Bankers

Sixty Wall Street **New York**